

No.

200200050



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Kansas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

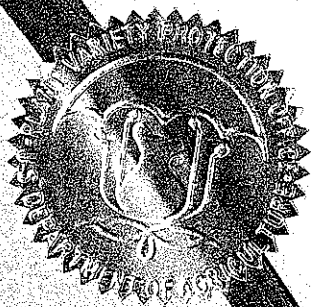
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE SEED. 34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Stanton'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixteenth day of September, in the year two thousand two.

Attest:



*Commissioner*

Plant Variety Protection Office  
Agricultural Marketing Service

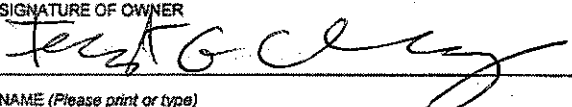
*Secretary of Agriculture*

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Kansas Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME KS95H167-3		3. VARIETY NAME Stanton	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Waters Hall Kansas State University Manhattan KS 66506		5. TELEPHONE (Include area code) 785-532-6147		FOR OFFICIAL USE ONLY PVPO NUMBER <b>200200050</b>	
		6. FAX (Include area code) 785-532-6563			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) University		8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION 12/14/2001	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) T. Joe Martin Kansas State University Agricultural Research Center—Hays 1232 240th Avenue Hays, KS 67601-9228				FILING AND EXAMINATION FEES: \$ 2705.00 DATE 12/14/01 CERTIFICATION FEE: \$ 320.00 DATE 4/3/02	
11. TELEPHONE (Include area code) 785-625-3425		12. FAX (Include area code) 785-623-4369		13. E-MAIL jmartin@oznet.ksu.edu	
14. CROP KIND (Common Name) wheat		15. GENUS AND SPECIES NAME OF CROP Triticum aestivum		16. FAMILY NAME (Botanical) Gramineae	
17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)			
19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input type="checkbox"/> NO (If "no", go to item 22)		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? IF YES, WHICH CLASSES? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED			
21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? IF YES, SPECIFY THE <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED NUMBER 1,2,3, etc. <b>1 11-23-01</b> (If additional explanation is necessary, please use the space indicated on the reverse.)		22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)			
23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)		24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER 		SIGNATURE OF OWNER			
NAME (Please print or type) Dr. Forrest Chumley		NAME (Please print or type)			
CAPACITY OR TITLE Associate Director of Research		DATE 12-5-01		CAPACITY OR TITLE	
				DATE	

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,705 (\$320 filing fee and \$2,385 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

#### ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;  
(2) the details of subsequent stages of selection and multiplication;  
(3) evidence of uniformity and stability; and  
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
  - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

**21. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

**22. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Fall, 2001 sold seed in U.S.

**23. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center—East, Beltsville, MD 20705. Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed/lsg-sd.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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S&T-470 (04-01) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (02-99) which is obsolete.

## Stanton, PVP Application

## Exhibit A: Origin and Breeding History of the Variety. (Revised)

Stanton was selected from the cross PI220350/KS87H57//TAM200/KS87H66/3/KS87H325

## Parents:

PI220350 = A Russian wheat aphid resistant accession from Afghanistan.

KS87H57 = PI191545/5\*Larned/Eagle//Sage/3/TAM 105

TAM 200

KS87H66 = Selection made from a randomly mated population. The following F<sub>1</sub>s or lines were randomly mated to produce the population.

1. Hawk/4/PI194358/2\*Larned/Eagle//Sage/3/Larned/Trison (F<sub>1</sub> from last cross)
2. Tut/4/ PI195713/2\*Larned/Eagle//Sage/3/Larned/Trison (F<sub>1</sub> from last cross)
3. TAM 105/3/PI195713/2\*Larned/Eagle//Sage (F<sub>1</sub> from last cross)
4. TAM 105/3/PI194358/2\*Larned/Eagle//Sage (F<sub>1</sub> from last cross)
5. TAM 105/4/ PI194358/2\*Larned/Eagle//Sage/3/Larned/Trison (F<sub>1</sub> from last cross)
6. TAM 105/4/PI194358/3/Larned/ Eagle//Sage/4/PI195713/2\*Larned /Eagle//Sage (F<sub>1</sub> from last cross)
7. TAM 105/Wings (F<sub>1</sub> from last cross)
8. Arkan/Wings (F<sub>1</sub> from last cross)
9. Arkan/4/PI195713/2\*Larned/Eagle//Sage/3/Larned/Trison (F<sub>1</sub> from last cross)
- 10 Arkan/4/PI194358/2\*Larned/Eagle//Sage/3/Larned/Trison (F<sub>1</sub> from last cross)
- 11 PI194358/2\*Larned/Eagle//Sage/3/Arkan (F<sub>1</sub> from last cross)
- 12 PI194358/2\*Larned/Eagle//Sage/3/TAM 105//Payne/Amigo (F<sub>1</sub> from last cross)
- 13 PI194358/2\*Larned/Eagle//Sage/3/ND7637 (F<sub>1</sub> from last cross)
- 14 PI194358/2\*Larned/Eagle//Sage/3/ND7637/TX73V169 (TAM 101/Centurk) (F<sub>1</sub> from last cross)
- 15 PI194358/2\*Larned/Eagle//Sage/3/ND7637/TX73V169 (F<sub>1</sub> from last cross)
- 16 PI194358/2\*Larned/Eagle//Sage/3/TAM 105//Larned/Trison (F<sub>1</sub> from last cross)
- 17 PI195713/2\*Larned/Eagle//Sage/3/Larned/Trison (KS80HA845)
- 18 Newton sib (KS75210)

KS87H325 = RL6005/RL6008//2\*Larned/Cheney/Larned/4/Bennett sib/5/TAM 107

1990: F<sub>1</sub> was grown in field at Hays, KS and harvested in bulk. (all F<sub>1</sub> plants harvested together). Segregation was noted for height, maturity, and resistance to leaf rust among the F<sub>1</sub> plants. The only selection criteria used was for resistance to leaf rust.

1991: F<sub>2</sub> grown in field at Hays, KS and harvested in bulk. The F<sub>2</sub> population was observed to segregate for maturity, height, and leaf rust resistance.

1992: F<sub>3</sub> was grown in field at Hays, KS and individual head selections were made. The F<sub>3</sub> population was observed to segregate for the same characteristics as in the F<sub>2</sub>.

## Exhibit A: Continued (Stanton PVPA)

1993: F<sub>4</sub> head rows were grown at Hays, KS and harvested a single head row after selecting six head selections from the row. Selection criteria used included visual yield estimates, height, maturity, shattering resistance, leaf rust resistance, test weight, and grain hardness.

1994: F<sub>5</sub>, seed from the F<sub>4</sub> head row tested in a preliminary yield test at 3 KS locations. The six reselection head rows were grown at Hays, KS and a single row was harvested and six head selections were made from that single row. Selection criteria used included grain yield and test weight, height, maturity, coleoptile length, bread quality factors as measured with the mixograph, and reaction to Russian wheat aphid, Hessian fly, leaf rust, and wheat streak mosaic virus. Among F<sub>5</sub> selections from this cross the population was segregating for height, maturity, resistance to Russian wheat aphid, Hessian fly, leaf rust, wheat streak mosaic virus and mixing strength.

1995: F<sub>6</sub>, seed from the F<sub>5</sub> head row was tested in the preliminary yield test at 3 KS locations. The F<sub>6</sub> head selections were grown at Hays and a single row was harvested. Six head selections were harvested from the selected head row. Selection criteria used included grain yield and test weight, height uniformity, uniform maturity, reaction to Russian wheat aphid, Hessian fly, leaf rust, and bread quality factors as measured with the mixograph. Segregation was observed within the line for reaction to Hessian fly and leaf rust. The reselections harvested from the line were homozygous for leaf rust resistance.

1996: F<sub>7</sub> was tested in the Advanced Yield Nursery at 6 KS locations. The F<sub>7</sub> head rows were grown at Hays, KS and a single row was harvested. A small increase plot was grown at Hays using the seed from the selected F<sub>6</sub> head row. Selection criteria included grain Stanton, PVP Application

yield, test weight, kernel size, height, maturity, winter survival, reaction to Hessian fly, stem rust, wheat streak mosaic virus, and hard wheat milling and bread baking tests. We noted no characteristics for which the line was segregating.

1997: F<sub>8</sub> was tested in the Kansas Intrastate Nursery (KIN) at 16 KS locations. A small increase was grown at Hays from the seed harvested from the F<sub>7</sub> head row. 200 head selections were harvested from the increase plot. Selection criteria used included grain yield and test weight, kernel size, height, maturity, shattering, reaction to Russian wheat aphid, Hessian fly, leaf rust, and hard wheat milling and bread baking tests.

1998: F<sub>9</sub> was tested in the KIN, Southern Regional Performance Nursery (SRPN) and the Kansas Performance Test with Winter Wheat Varieties. 200 head rows were grown at Hays and evaluated for uniformity in height, maturity, leaf rust resistance, and resistance to Russian wheat aphid. Selection criteria used on the KIN entries were yield, test weight, kernel size, plant height, maturity, shattering tolerance, reaction to Hessian fly, wheat streak mosaic virus and leaf rust. Plus hard wheat milling and bread baking characteristics.

Exhibit A Continued (Stanton PVPA)

999: F<sub>10</sub> tested in same nurseries as in 1998. Breeders seed was produced from the bulked head row seed at Hays, KS. Segregation within the line was not noted. The selection criteria used were the same as in 1998.

2000: F<sub>11</sub> was tested in the Kansas Performance Test with Winter Wheat Varieties. Breeders seed was increased at the Agricultural Research and Extension Center at Colby KS. We noted no segregation within the line. Primary selection criteria were yield, test weight, hard wheat milling and bread baking quality, resistance to leaf rust, wheat streak mosaic virus, Hessian fly, and Russian wheat aphid.

2001 F<sub>12</sub> was tested in the same nurseries as in 2000. The breeders seed was planted at Colby KS for production of foundation seed for distribution in the fall of 2001. Segregation within the line was not noted.

Stanton is uniform. Variants are limited to: plants with red glume color that occur at a frequency of less than 1 in 1000 plants and slightly taller plants that occur at a frequency of less than 1 in 1000 plants. The variants as well as the typical plants are commercially acceptable.

Stanton is stable. When sexually reproduced, the variety remains unchanged in its essential and distinctive characteristics. Stanton was observed to be uniform and stable during the four generations prior to release.

Stanton, PVP Application  
Exhibit B: Statement of Distinctness

Stanton is most similar to TAM 107.

TAM 107 has brown glume color while Stanton has white glumes.

TAM 107 is susceptible to Russian wheat aphid while Stanton is resistant (Appendix A, Table 1).

Leaves of Stanton are distinctly pubescent on the adaxial (upper) surface. Its flag leaf trichomes range from .3 to .5 mm in length. Trichomes on the flag leaves of TAM 107 range from .05 to .075 mm in length (see Appendix A, Figure 1).

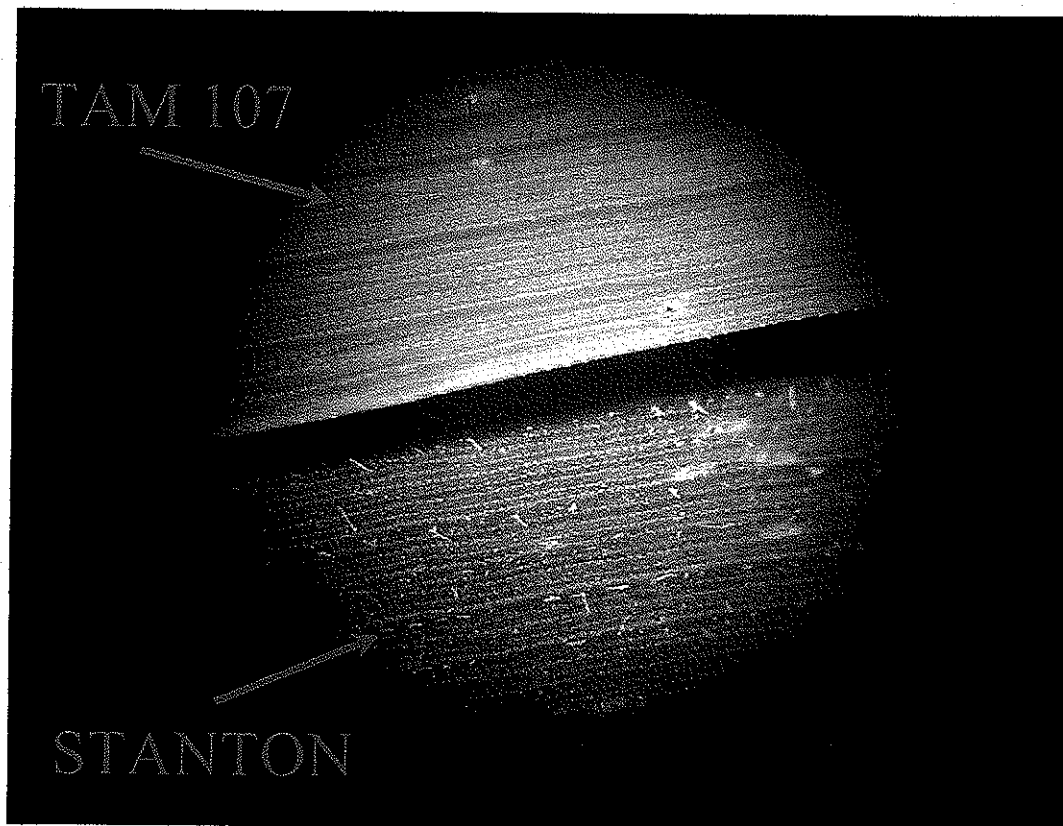
Table 1. Relative ratings for resistance to the Russian wheat aphid (RWA) of Stanton and other hard winter wheat cultivars.

Cultivar	RWA* rating	
	1999	2000
Stanton (KS95H167-3)	4.0	3.3
Halt	2.3	2.5
Yumar	3.0	3.3
Prowers	3.3	3.3
Prairiered	4.0	3.0
TAM 107	7.5	7.3
Jagger	8.0	7.8
Trego	8.0	8.0
2137	8.0	7.8
C.V. (%)	9.6	10.0
L.S.D. (.05)	0.75	0.59

\* Entries were rated on a 1-9 scale (1=most resistant). The seedling test was conducted as described by Webser et al. 1987 (J. Econ. Ent. 8:944-949). A randomized complete block design with 4 replications each year was used.



## Appendix A



**Figure 1 – Flag leaves of Stanton and TAM 107 at 45 X.**

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)	FOR OFFICIAL USE ONLY
Kansas State University	PVPO NUMBER
ADDRESS (Street and No. or RD No., City, State, and Zip Code)	200200050
Waters Hall	VARIETY NAME
Kansas State University	Stanton
Manhattan, KS 66506	TEMPORARY OR EXPERIMENTAL DESIGNATION
	KS95H167-3

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.  or ) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Please answer all questions for your variety; lack of response may delay progress of your application.

- KIND:
 

<input type="text" value="1"/>	1=Common	2=Durum	3=Club	4=Other (SPECIFY):
--------------------------------	----------	---------	--------	--------------------
- VERNALIZATION:
 

<input type="text" value="2"/>	1=Spring	2=Winter	3=Other (SPECIFY):
--------------------------------	----------	----------	--------------------
- COLEOPTILE ANTHOCYANIN:
 

<input type="text" value="1"/>	1=Absent	2=Present
--------------------------------	----------	-----------
- JUVENILE PLANT GROWTH:
 

<input type="text" value="1"/>	1=Prostrate	2=Semi-erect	3=Erect
--------------------------------	-------------	--------------	---------
- PLANT COLOR (boot stage):
 

<input type="text" value="2"/>	1 = Yellow-Green	2 = Green	3 = Blue-Green
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- FLAG LEAF (boot stage):
 

<input type="text" value="1"/>	1 = Erect	2 = Recurved	<input type="text" value="1"/>	1 = Not Twisted	2 = Twisted
--------------------------------	-----------	--------------	--------------------------------	-----------------	-------------
- EAR EMERGENCE:
 

<input type="text" value="0"/>	<input type="text" value="3"/>	Number of Days Earlier Than	*
		Number of Days Later Than	TAM 107 *

## 8. ANTHOR COLOR:

1 = Yellow

2 = Purple

## 9. PLANT HEIGHT (from soil to top of head, excluding awns):

cm Taller Than TAM 107

cm Shorter Than

\* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

## 10. STEM:

## A. ANTHOCYANIN

1 = Absent

2 = Present

## D. INTERNODE (SPECIFY NUMBER)

1 = Hollow

2 = Semi-solid

3 = Solid

## B. WAXY BLOOM

1 = Absent

2 = Present

## E. PEDUNCLE

1 = Absent

2 = Present

## C. HAIRINESS (last internode of rachis)

1 = Absent

2 = Present

cm Length

## 11. HEAD (at Maturity):

## A. DENSITY

1 = Lax

2 = Middense

3 = Dense

## C. CURVATURE

1 = Erect

2 = Inclined

3 = Recurved

## B. SHAPE

1 = Tapering

2 = Strap

3 = Clavate

4 = Other (SPECIFY):

## D. AWNEDNESS

1 = Awnless

2 = Apically Awnletted

3 = Awnletted

4 = Awned

## 12. GLUMES (at Maturity):

## A. COLOR

1 = White

2 = Tan

3 = Other (SPECIFY):

## C. BEAK

1 = Obtuse

2 = Acute

3 = Acuminate

## B. SHOULDER

1 = Wanting

2 = Oblique

3 = Rounded

4 = Square

5 = Elevated

6 = Apiculate

## D. LENGTH

1 = Short

2 = Medium

(ca. 7mm)

(ca. 8mm)

3 = Long (ca. 9mm)

12. GLUMES (at Maturity) Continued:

200200050

E. WIDTH

☐ 2 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)  
3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

☐ 3 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

☐ 2 1 = Rounded 2 = Angular

E. Color

☐ 3 1 = White 2 = Amber 3 = Red  
4 = OTHER (Specify)

F. TEXTURE

☐ 1 1 = Hard 2 = Soft

C. BRUSH

☐ 2 1 = Short 2 = Medium 3 = Long

☐ 1 1 = Not Collared 2 = Collared

D. CREASE

☐ 2 1 = Width 60% or less of Kernel  
2 = Width 80% or less of Kernel  
3 = Width Nearly as Wide as Kernel

☐ 2 1 = Depth 20% or less of Kernel  
2 = Depth 35% or less of Kernel  
3 = Depth 50% or less of Kernel

G. PHENOL REACTION (see instructions):

☐ 4 1 = Ivory 2 = Fawn  
3 = Light Brown 4 = Dark Brown  
5 = Black

4. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

☐ 2 Stem Rust (*Puccinia graminis* f. sp. *tritici*)  
TRTT RTRQ TPMK QKCS RHMS RTHJ  
RTQQ

☐ 2 Stripe Rust (*Puccinia striiformis*)

☐ 1 Tan Spot (*Pyrenophora tritici-repentis*)

☐ 0 Halo Spot (*Selenophoma donacis*)

☐ 0 *Septoria nodorum* (Glume Blotch)

☐ 0 *Septoria avenae* (Speckled Leaf Disease)

☐ 1 *Septoria tritici* (Speckled Leaf Blotch)

☐ 1 Scab (*Fusarium* spp.)

☐ 2 Leaf Rust (*Puccinia recondita* f. sp. *tritici*)  
TDBM TCLH PLLM TLLC MGBM PNMR  
KDBM PLMR

☐ 1 Loose Smut (*Ustilago tritici*)

☐ 0 Flag Smut (*Urocystis agropyri*)

☐ 0 Common Bunt (*Tilletia tritici* or *T. laevis*)

☐ 0 Dwarf Bunt (*Tilletia controversa*)

☐ 0 Karnal Bunt (*Tilletia indica*)

☐ 1 Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)

☐ 0 "Snow Molds"

14. Disease (Continued) (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

- |   |   |
|---|---|
| <input type="checkbox"/> 1 "Black Point" (Kernel Smudge)              | <input type="checkbox"/> 0 Common Root Rot ( <i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) |
| <input type="checkbox"/> 1 Barley Yellow Dwarf Virus (BYDV)           | <input type="checkbox"/> 0 Rhizoctonia Root Rot ( <i>Rhizoctonia solani</i> )                                 |
| <input type="checkbox"/> 1 Soilborne Mosaic Virus (SBMV)              | <input type="checkbox"/> 0 Black Chaff ( <i>Xanthomonas campestris</i> pv. <i>translucens</i> )               |
| <input type="checkbox"/> 3 Wheat Yellow (Spindle Streak) Mosaic Virus | <input type="checkbox"/> 2 Bacterial Leaf Blight ( <i>Pseudomonas syringae</i> pv. <i>syringae</i> )          |
| <input type="checkbox"/> 4 Wheat Streak Mosaic Virus (WSMV)           | <input type="checkbox"/> Other (SPECIFY)  |
| <input type="checkbox"/> Other (SPECIFY)                              | <input type="checkbox"/> Other (SPECIFY)  |
| <input type="checkbox"/> Other (SPECIFY)                              | <input type="checkbox"/> Other (SPECIFY)  |
| <input type="checkbox"/> Other (SPECIFY)                              | <input type="checkbox"/> Other (SPECIFY)  |

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

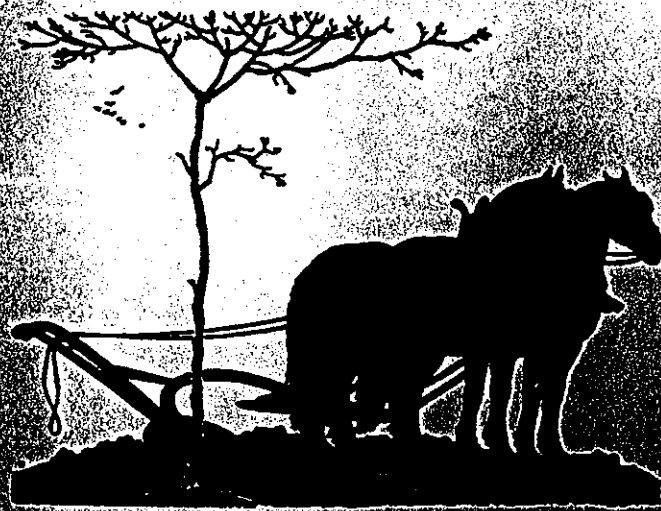
- |  |  |
|--|--|
| <input type="checkbox"/> 3 Hessian Fly ( <i>Mayetiola destructor</i> )<br>Great Plains Biotype (H18) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Stem Sawfly ( <i>Cephus</i> spp.)   | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Cereal Leaf Beetle ( <i>Oulema melanopa</i> )                             | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 2 Russian Aphid ( <i>Diuraphis noxia</i> )                                  | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 1 Greenbug ( <i>Schizaphis graminum</i> )                                   | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Aphids  | <input type="checkbox"/> Other (SPECIFY) |

6. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

**Stanton, PVP Application****Exhibit D: Additional description of the variety**

The hard wheat milling properties and bread baking characteristics of Stanton were compared to currently grown varieties by the members of the Wheat Quality Council in 1997 and 1998. They rated Stanton's overall baking quality as above average in both years. I have attached copies of their reports ( see Appendix B).

# Milling and Baking Test Results for Hard Winter Wheats Harvested in 1997



## 48th Report on Wheat Quality

A coordinated effort by the agricultural  
and baking industries to improve wheat

# 1997 Miag Multomat (Small-Scale) Samples Kansas

Stanton ~~SE~~

Sample Number	97-407	97-408	97-409	97-410	97-419	97-420		
Variety Identification	Lamed (check)	KS95 H176-1	KS95 H167-3	KS96 HW62-6	Jagger (check)	KS84 063-2W		
<b>Wheat Data</b>								
FGIS Classification	HRW	HRW	HRW	HWW 24%HR	HRW	HWW		
U.S. Bushel Weight (lbs)	60.2	59.0	59.7	61.8	60.1	60.9		
Hectoliter Weight (kg)	77.5	75.9	76.8	79.5	77.3	78.4		
1000 Kernel Weight	36.0	29.2	37.4	33.6	23.0	26.5		
NIR Hardness	67	65	67	74	71	72		
<b>Wheat Size Test</b>								
Over 7 Wire (%)	82.8	68.2	88.3	74.2	51.6	61.7		
Over 9 Wire (%)	17.1	31.7	11.7	25.7	47.6	38.1		
Through 9 Wire (%)	0.0	0.2	0.1	0.1	0.8	0.2		
<b>Single Kernel</b>								
Hardness	59	59	58	75	79	76		
Weight (mg)	34.9	29.4	37.7	33.7	29.4	29.6		
Diameter (mm)	2.65	2.47	2.88	2.60	2.53	2.49		
Moisture (%)	10.80	10.50	10.40	10.20	9.60	9.80		
Protein (% *)	11.60	12.30	12.20	12.20	14.30	13.90		
Ash (% *)	1.34	1.34	1.19	1.29	1.22	1.24		
<b>Milling and Straight Grade Flour Data</b>								
Straight Grade Flour Yield (% T.P.)	73.0	73.8	73.0	72.0	72.3	69.4		
Moisture (%)	13.70	13.60	13.60	13.50	13.20	13.20		
Protein (% *)	10.60	11.00	11.20	11.00	13.30	13.30		
Ash (% *)	0.43	0.40	0.38	0.42	0.43	0.42		
<b>Glutomatic</b>								
Wet (% *)	2.85	2.75	2.76	2.93	3.59	3.51		
Dry (% *)	0.96	0.98	0.98	1.01	1.23	1.21		
Index	95.4	98.7	98.6	98.5	98.2	98.3		
<b>Color</b>								
Kent Jones/Simon	-0.38	0.79	-0.46	-0.28	-0.40	0.79		
Falling Number *	445	506	402	405	592	561		
<b>Starch Damage</b>								
<b>Average Micron Size</b>								
Fisher S.S.	10.6	10.3	10.6	10.7	10.3	10.6		

\* 14% Moisture Basis

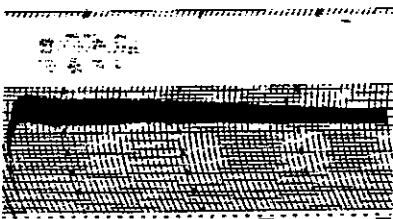


# 1997 Physical Testing Results (Small Scale) Kansas

## Farinograms



Abs: 60.8 %, Peak: 5.5 min. Stab: 10 min.



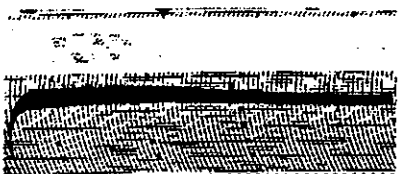
Abs: 56.8 %, Peak: 10 min. Stab: 31 min.



Abs: 57.2 %, Peak: 15.5 min. Stab: 25 min.



Abs: 59.2 %, Peak: 7 min. Stab: 50.75 min.



Abs: 62.5 %, Peak: 14.5 min. Stab: 29.75 min.

97-407  
Larned (check)

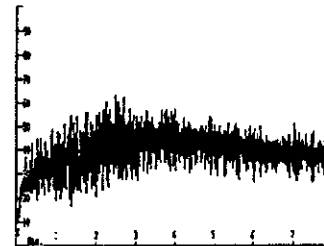
97-408  
KS95H176-1

97-409  
KS95H167-3  
*Stanton*

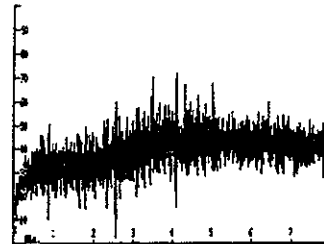
97-410  
KS95HW62-6

97-419  
Jagger (check)

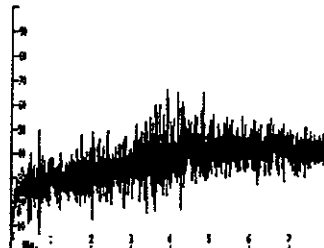
## Mixograms



Abs: 64.6 %, Peak: 2.88 min.



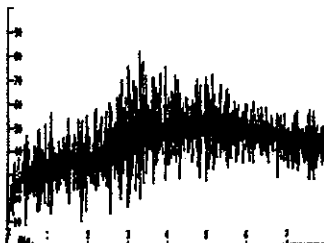
Abs: 62.1 %, Peak: 4.38 min.



Abs: 62.6 %, Peak: 4.38 min.



Abs: 65.3 %, Peak: 4.25 min.



Abs: 67.1 %, Peak: 4.25 min.

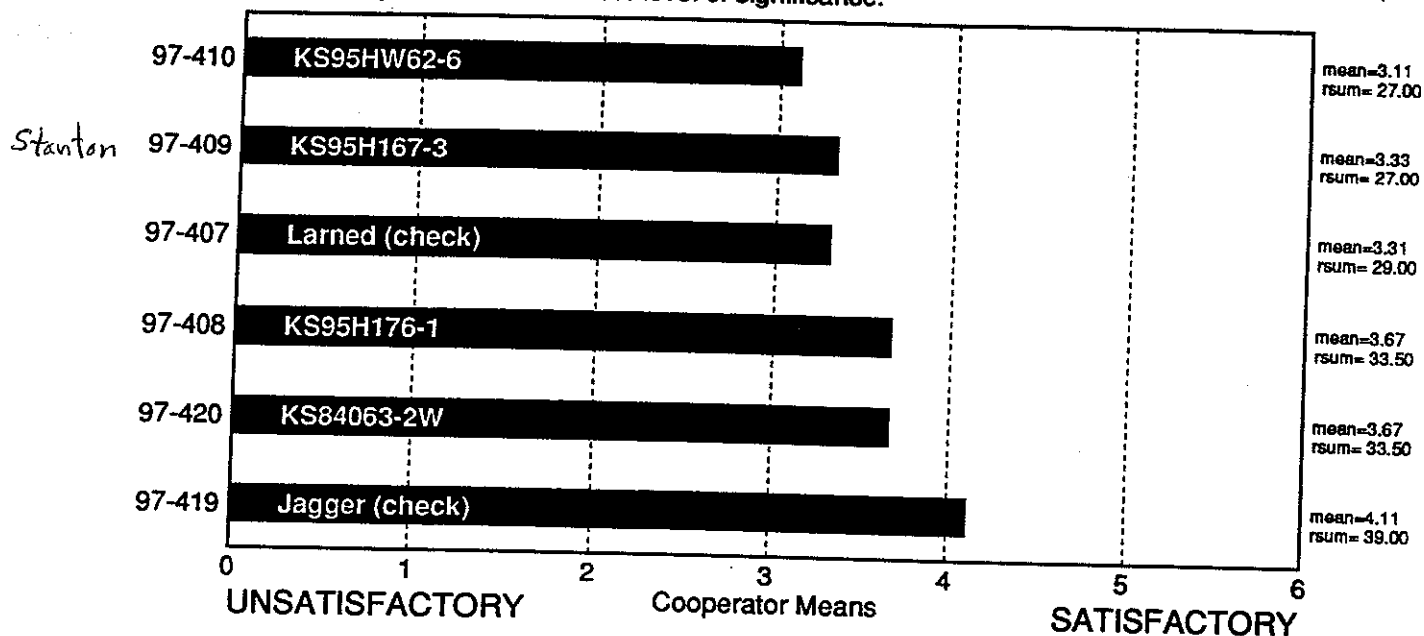
# SPONGE CHARACTERISTICS

## (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=9  
chisq=3.52  
chisq=3.97  
cvchisq=11.07



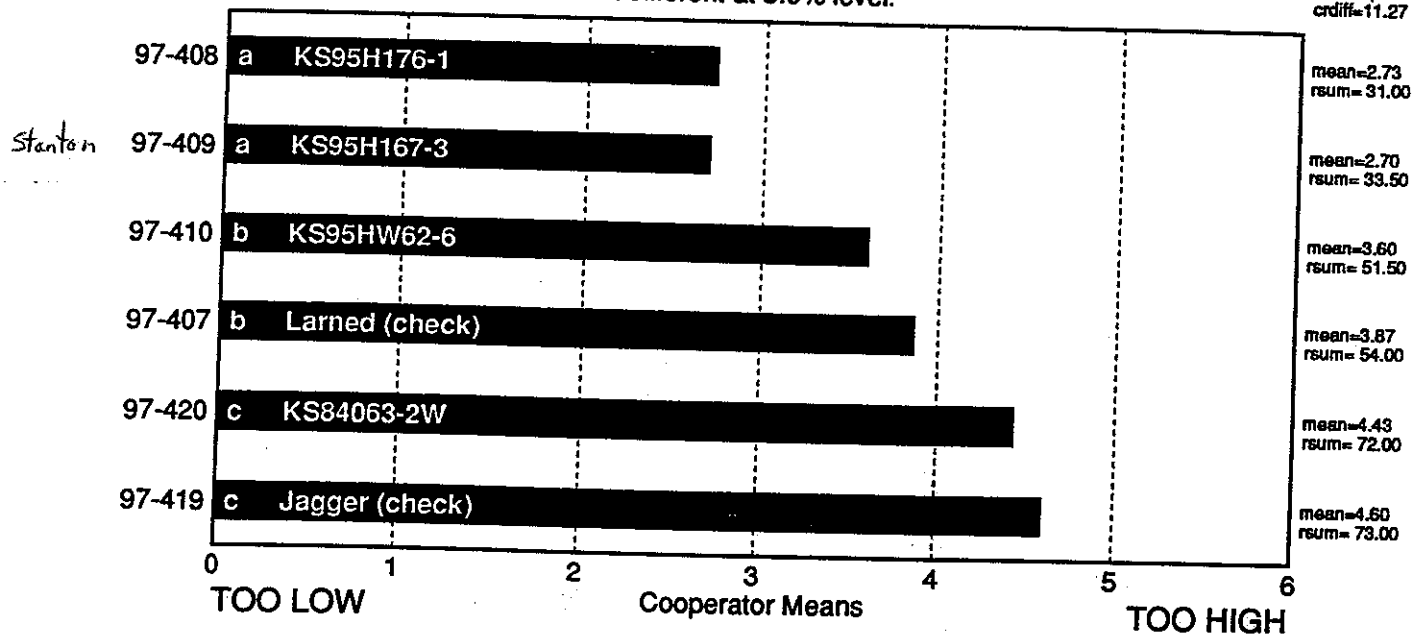
# BAKE ABSORPTION

## (Small Scale) Kansas

Variety order by rank sum

Samples with same letter not different at 5.0% level.

ncoop=15  
chisq=30.99  
chisq=31.65  
cvchisq=11.07  
crdiff=11.27

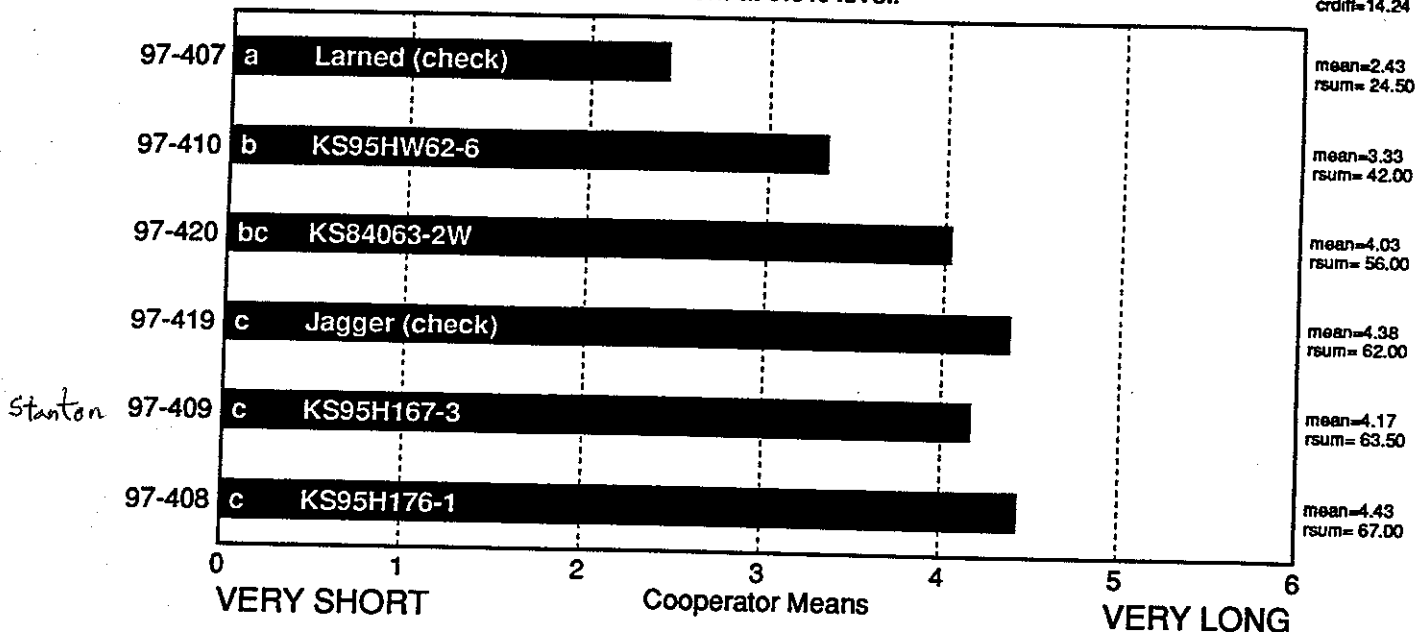


## BAKE MIX TIME (Small Scale) Kansas

Variety order by rank sum

Samples with same letter not different at 5.0% level.

ncoop=15  
chisq=25.30  
chisq=25.55  
cvchisq=11.07  
crdiff=14.24

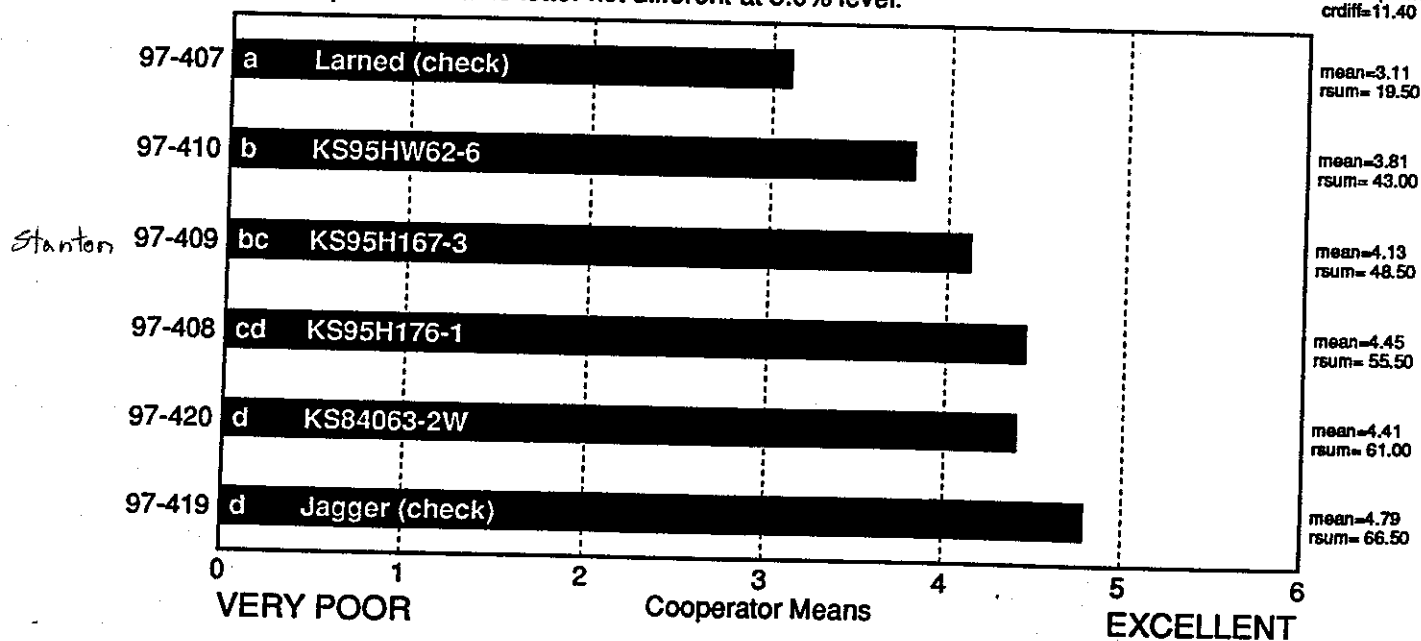


## MIXING TOLERANCE (Small Scale) Kansas

Variety order by rank sum

Samples with same letter not different at 5.0% level.

ncoop=14  
chisq=28.55  
chisq=29.82  
cvchisq=11.07  
crdiff=11.40

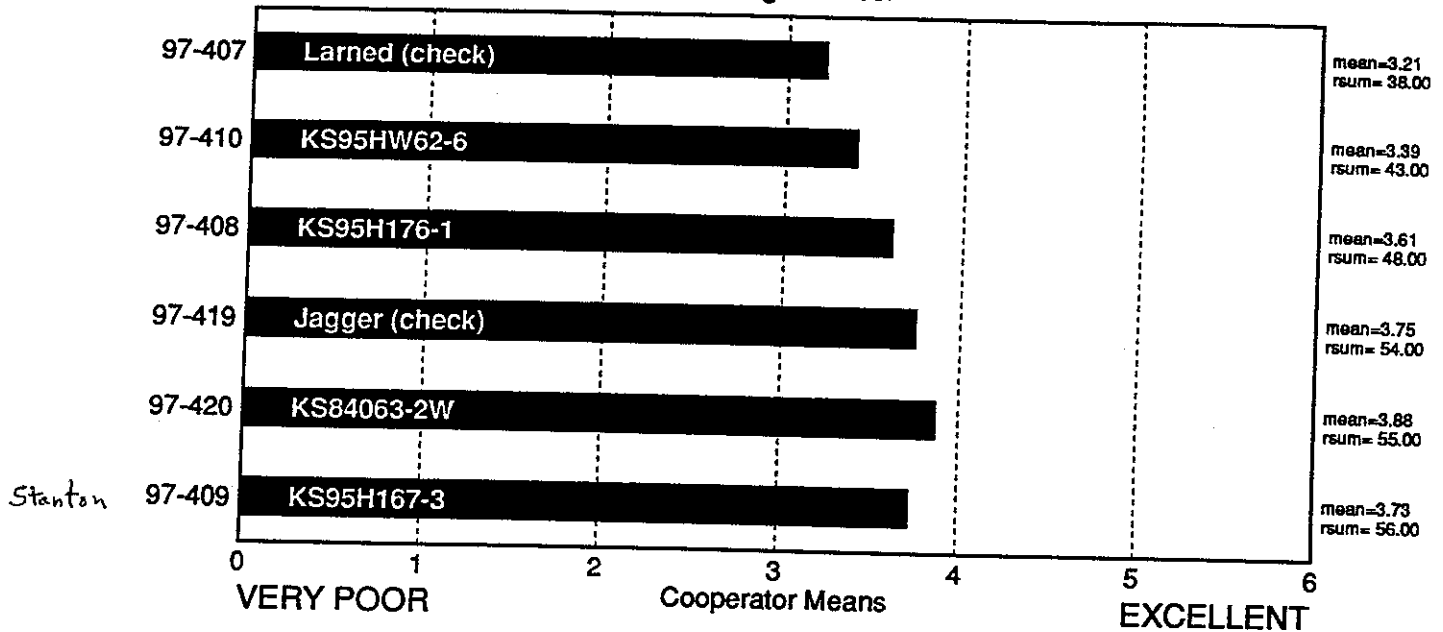


# DOUGH CHAR. 'OUT OF MIXER' (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=14  
chisq=5.47  
chisq=5.59  
cvchisq=11.07



## DOUGH CHAR. 'OUT OF MIXER', DESCRIBED (Small Scale) Kansas

	Sticky	Wet	Tough	Good	Excellent
97-407 Larned (check)	2	0	0	12	1
97-408 KS95H176-1	2	0	2	11	0
97-409 KS95H167-3	0	0	1	12	2
97-410 KS95HW62-6	1	1	0	12	1
97-419 Jagger (check)	1	0	5	9	0
97-420 KS84063-2W	1	0	3	11	0

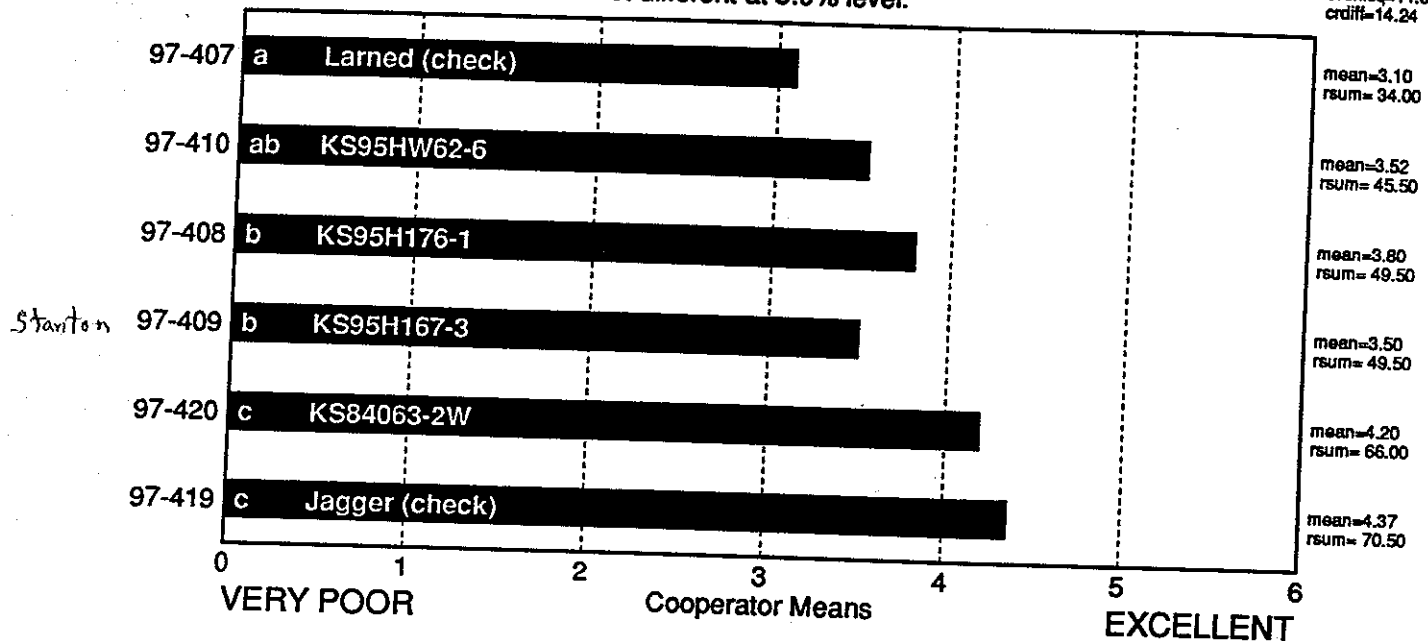
Frequency Table

# DOUGH CHAR. 'AT MAKE UP' (Small Scale) Kansas

Variety order by rank sum

Samples with same letter not different at 5.0% level.

ncoop=15  
chisq=17.44  
chisq=17.71  
cvchisq=11.07  
crdiff=14.24



## DOUGH CHAR. 'AT MAKE UP', DESCRIBED (Small Scale) Kansas

	Sticky	Wet	Tough	Good	Excellent
97-407 Larned (check)	1	0	0	13	1
97-408 KS95H176-1	0	0	2	13	0
97-409 KS95H167-3	0	0	1	14	0
97-410 KS95HW62-6	0	0	1	13	1
97-419 Jagger (check)	0	0	7	8	0
97-420 KS84063-2W	0	0	5	9	1

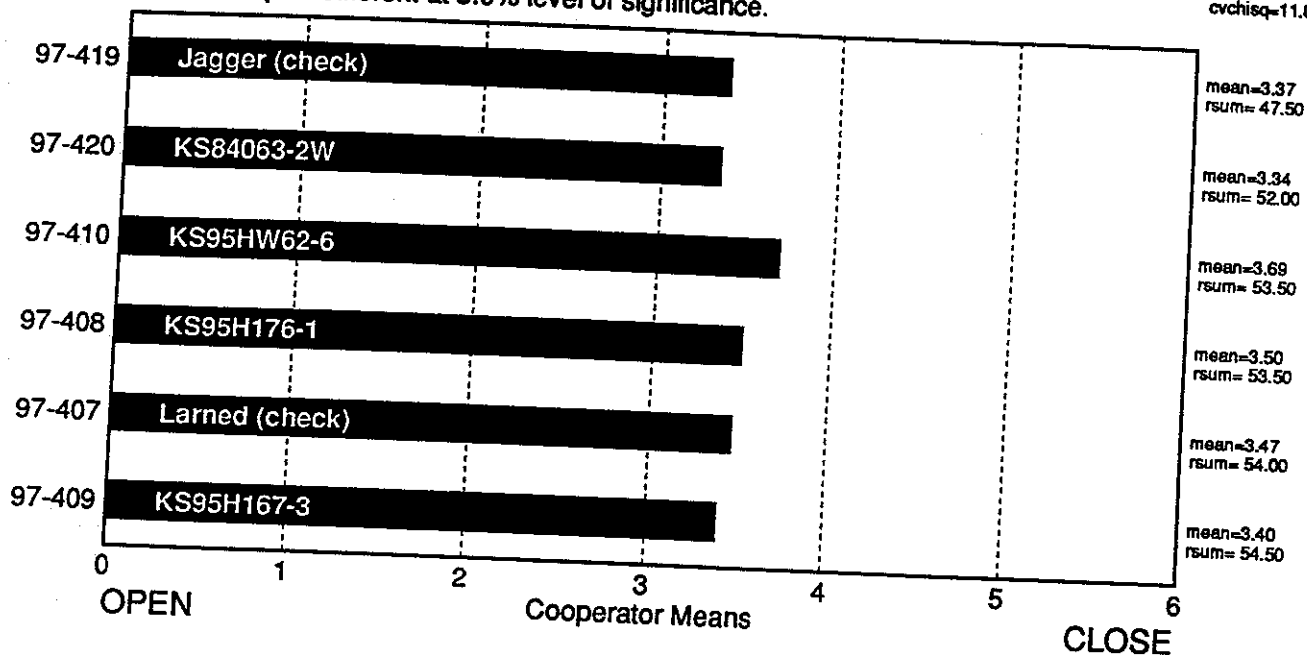
Frequency Table

# CRUMB GRAIN (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=15  
chisq=0.64  
chisq=0.64  
cvchisq=11.07



## CRUMB GRAIN, DESCRIBED (Small Scale) Kansas

	Open	Dense	Irregular
97-407 Larned (check)	6	1	4
97-408 KS95H176-1	4	2	5
97-409 KS95H167-3	5	2	4
97-410 KS95HW62-6	3	2	6
97-419 Jagger (check)	4	4	3
97-420 KS84063-2W	3	3	6

Frequency Table

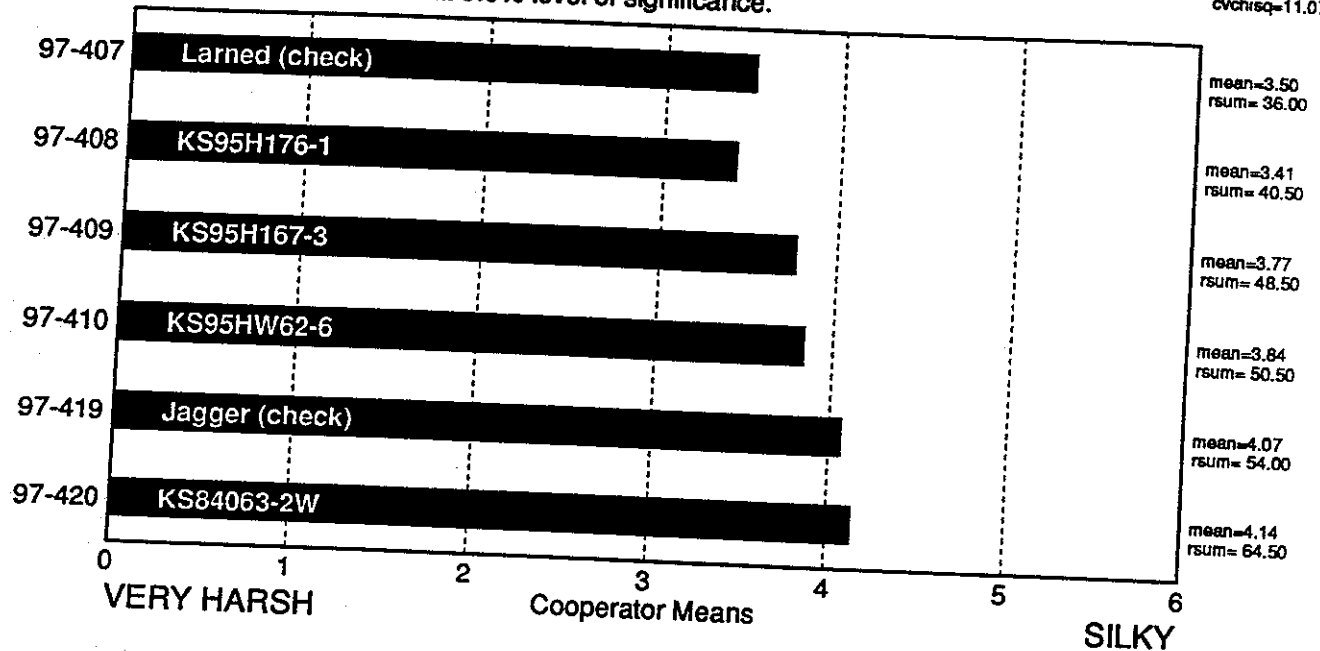
200200050

# CRUMB TEXTURE (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=14  
chisq=10.39  
chisqc=10.85  
cvchisq=11.07



## CRUMB TEXTURE, DESCRIBED (Small Scale) Kansas

	Coarse	Harsh	Silky
97-407 Larned (check)	3	3	5
97-408 KS95H176-1	4	4	3
97-409 KS95H167-3	4	2	5
97-410 KS95HW62-6	3	3	5
97-419 Jagger (check)	3	3	6
97-420 KS84063-2W	4	0	8

Frequency Table

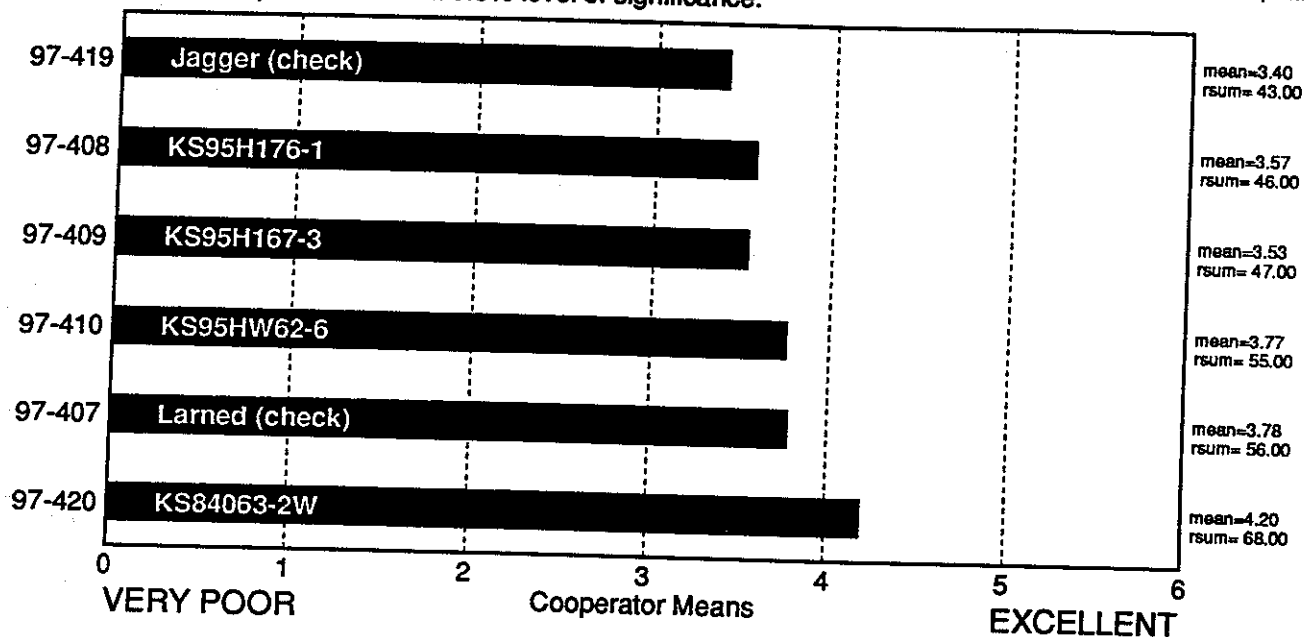
200200050

# CRUMB COLOR (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=15  
chisq=8.03  
chisq=8.62  
cvchisq=11.07



## CRUMB COLOR, DESCRIBED (Small Scale) Kansas

	Yellow	Gray	Dull	Creamy	Bright White
97-407 Larned (check)	2	0	0	11	1
97-408 KS95H176-1	1	0	1	11	1
97-409 KS95H167-3	1	0	0	13	0
97-410 KS95HW62-6	1	0	1	10	2
97-419 Jagger (check)	2	0	2	8	2
97-420 KS84063-2W	0	0	1	7	6

Frequency Table

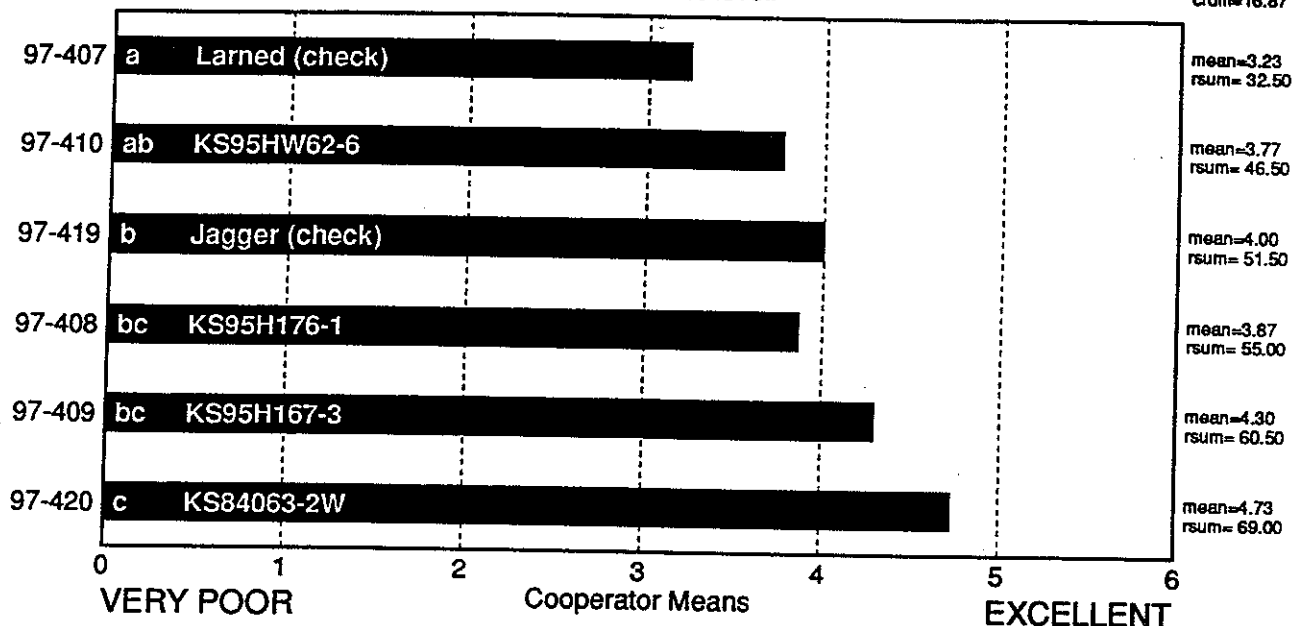


# LOAF VOLUME (Small Scale) Kansas

Variety order by rank sum

Samples with same letter not different at 5.0% level.

ncoop=15  
chisq=14.85  
chisq=14.81  
cvchisq=11.07  
crriff=16.87



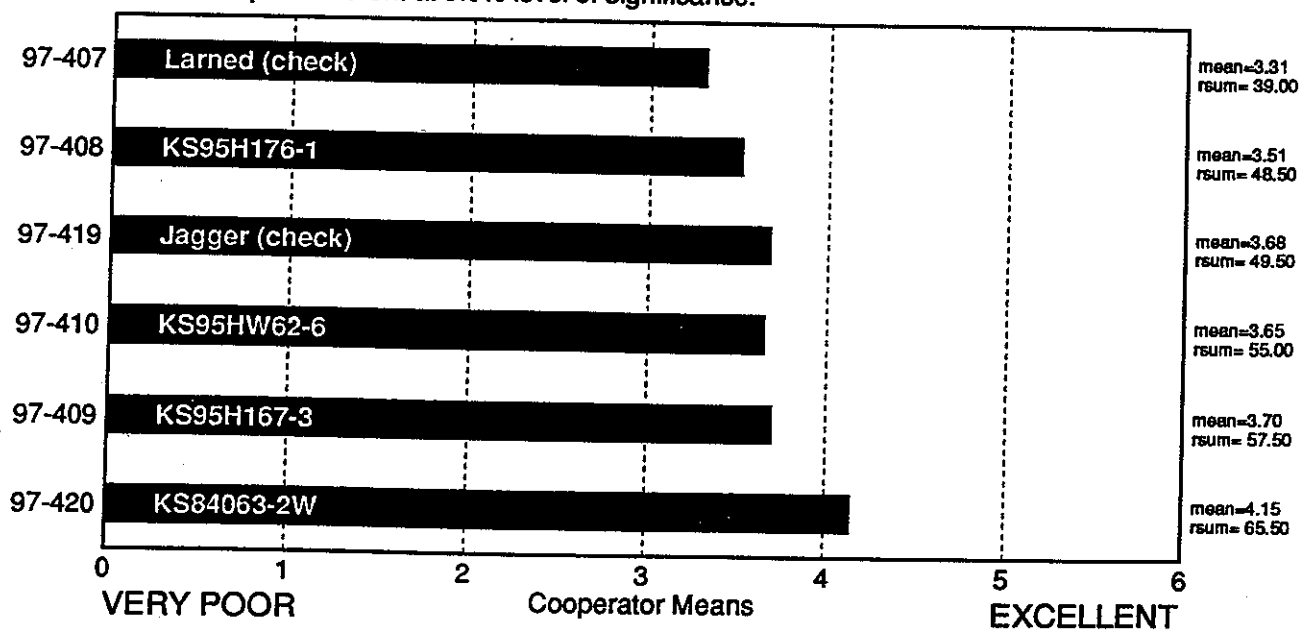
Stanton

# OVERALL BAKING QUALITY (Small Scale) Kansas

Variety order by rank sum

No samples different at 5.0% level of significance.

ncoop=15  
chisq=7.76  
chisq=7.78  
cvchisq=11.07



Stanton

# COOPERATOR'S COMMENTS

## (Small Scale) Kansas

### 97-407 Larned (check)

- SL CR BRIGHT
- 4' had sl higher vol. but was sticky, more open grain
- MARGINAL STRENGTH, AVERAGE VOLUME
- Slightly open, slightly irregular cells. Dry-firm body.
- good volume
- 63 ppm AA; uniform crumb grain; rough crust.
- GOOD MIXING TOLERANCE.

MOISTURE 13.68 ASH .436 (14%MB) PROTEIN 10.43 (14%MB)

FARINOGRAPH - ABS 62.8 (14%MB) PEAK 4.0 MTI 20

FALLING NUMBER 393 STARCH DAMAGE 5.94

- Very good loaf volume for its flour protein content.

### 97-408 KS95H176-1

- SL CR BRIGHT VERY OPEN GRAIN
- dough was better at 9' but had lower vol.
- VERY STRONG MIXING DOUGH, OPEN GRAIN, GOOD VOLUME
- Slightly irregular cells. Dry, very firm body
- Dry, dead doughs at make-up
- low absorption
- 13 ppm AA; fine uniform cells; slightly rough crust.
- LOW ABSORPTION.

MOISTURE 13.55 ASH .423 (14%MB) PROTEIN 10.82 (14%MB)

FARINOGRAPH - ABS 56.0 (14%MB) PEAK 2.5 MTI 15

FALLING NUMBER 411 STARCH DAMAGE 7.89

- Very good loaf volume for its flour protein content.
- Good crumb and texture.

### 97-409 KS95H167-3

- at 7.5' had very shrunken sides; at 9' was more open
- GOOD STRENGTH, EXCELLENT VOLUME, SL. OPEN GRAIN
- Creamy, slightly irregular cells
- 13 ppm AA; thin cell walls; exc. crumb grain.
- LOW ABSORPTION.

MOISTURE 13.64 ASH .423 (14%MB) PROTEIN 10.85 (14%MB)

FARINOGRAPH - ABS 55.6 (14%MB) PEAK 8.5 MTI 10

FALLING NUMBER 354 STARCH DAMAGE 6.78

- Very good loaf volume for its flour protein content.
- Good crumb and texture.

# COOPERATOR'S COMMENTS--Cont'd

## (Small Scale) Kansas

**97-410 KS95HW62-6**

- best vol. @ 5'; sl better grain @ 4'; sl sticky @ 6'
- GOOD VOLUME, NICE INTERIOR
- Creamy, slightly irregular cells
- 38 ppm AA;
- GOOD MIXING TOLERANCE.

MOISTURE 13.55 ASH .441 (14%MB) PROTEIN 10.87 (14%MB)

FARINOGRAPH - ABS 58.9 (14%MB) PEAK 6.0 MTI 10

FALLING NUMBER 378 STARCH DAMAGE 8.14

- Good loaf volume for its flour protein content.

**97-419 Jagger (check)**

- VERY OPEN SHOTTY GRAIN
- 7' & 10' mix were more elastic and had lower vol.
- Strong/Slightly Creamy
- VERY GOOD STRENGTH, GOOD VOLUME
- Irregular, slightly open cells. Volume down. Silky texture
- good protein
- low absorption
- 38 ppm AA;
- slightly sticky out of mixer.

- GOOD MIXING TOLERANCE. GOOD MIX TIME.

MOISTURE 12.98 ASH .456 (14%MB) PROTEIN 12.96 (14%MB)

FARINOGRAPH - ABS 60.8 (14%MB) PEAK 6.5 MTI 10

FALLING NUMBER 483 STARCH DAMAGE 8.14

- Crumb color was yellow and dull
- Good loaf volume for its flour protein content.
- Good crumb and texture.

**97-420 KS84063-2W**

- VERY OPEN SHOTTY GRAIN
- 7' was very shrunken; 11' had low vol & stringy dough
- Overall the Best
- GOOD CRUMB COLOR, ACCEPTABLE INTERIOR, ABOVE AVG. VOLUME
- Irregular, slightly open cells. Good body. Silky texture
- good color
- good protein
- 25 ppm AA; exc. loaf symmetry and crumb grain; soft crumb.
- GOOD FLOUR OVERALL.

MOISTURE 12.88 ASH .429 (14%MB) PROTEIN 12.83 (14%MB)

FARINOGRAPH - ABS 60.5 (14%MB) PEAK 8.5 MTI 10

FALLING NUMBER 420 STARCH DAMAGE 7.45

2002000505



**1998**  
**Milling and Baking Test Results**  
**for**  
**Hard Winter Wheats**

**Editor:**

**Patrick J. McCluskey**  
Department of Grain Science  
Kansas State University  
Manhattan, KS

**Coordinator:**

**Ben Handcock**, Executive Vice President  
Wheat Quality Council  
Pierre, SD

# Kansas: 1998 (Small-Scale) Samples

Stanton

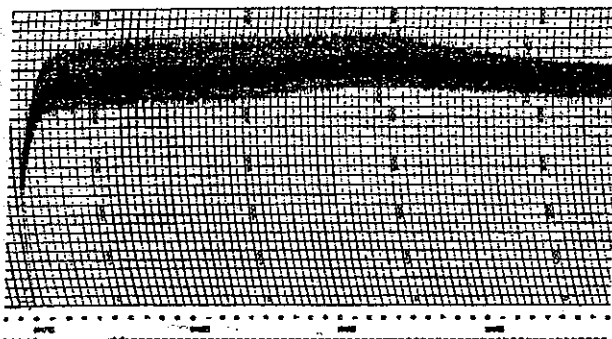
Sample Number	98-404	98-405	98-406	98-407	98-408	98-409	98-410	98-411
Variety Identification	Karl 92 (check)	Lamed (check)	KS95 H167-3	KS95 HW62-6	KS96 HW94	KS96 <sub>5</sub> HW118	KS84 063-2W	KS85 W663-42W
<b>Wheat Data</b>								
FGIS Classification	HRW	HRW	HRW 1.1% HDWH	HDWH	HDWH 0.4% HRW	HDWH 0.9% HRW	HDWH	HDWH 0.6% HRW
Test Weight (lb/bu)	59.8	60.5	59.6	59.7	60.1	60.4	59.3	60.4
Hectoliter Weight (kg/hl)	78.7	79.6	78.4	78.6	79.1	79.5	78.0	79.5
1000 Kernel Weight (gm)	26.8	28.4	28.4	26.3	24.2	29.5	25.7	25.4
NIR Hardness	57	74	67	74	67	54	72	51
Wheat Size Test								
Over 7 Wire (%)	40.2	52.1	56.8	40.4	32.4	56.2	44.7	34.6
Over 9 Wire (%)	59.2	47.1	42.9	58.6	66.1	43.5	54.8	64.7
Through 9 Wire (%)	0.6	0.8	0.3	1.0	1.5	0.4	0.5	0.7
Single Kernel Analysis								
Hardness	64	76	69	81	81	69	78	60
Weight (mg)	28.1	30.3	29.9	28.2	26.0	30.3	26.2	26.1
Diameter (mm)	2.32	2.44	2.44	2.30	2.28	2.44	2.21	2.25
Moisture (%)	10.2	10.4	10.2	10.4	10.3	10.5	10.4	10.4
Protein (%)**	13.6	13.6	12.9	13.5	13.9	13.1	15.1	14.4
Ash (%)*	1.40	1.48	1.43	1.47	1.49	1.38	1.45	1.33
<b>Milling and Straight Grade Flour Data</b>								
	98-404	98-405	98-406	98-407	98-408	98-409	98-410	98-411
Straight Grade Flour Yield (%T.P.)	74.7	74.1	74.0	74.2	74.6	75.9	71.6	73.6
Moisture (%)	13.7	13.5	13.2	14.1	13.8	13.5	14.1	14.0
Protein (%)*	12.4	12.3	11.7	12.1	12.3	12.0	14.2	13.5
Ash (%)*	0.46	0.46	0.44	0.44	0.44	0.41	0.46	0.41
Glutomatic								
Wet (%)*	30.2	34.5	30.5	31.9	26.9	31.5	37.0	34.7
Dry (%)*	11.4	12.0	10.8	11.2	10.0	10.7	12.9	12.4
Index	98.5	95.4	97.4	96.4	99.3	98.7	97.7	97.7
Color								
Agtron Flour Color	85	82	84	83	83	89	82	89
Simon Flour Color	-0.13	0.45	0.32	-0.19	0.09	-0.54	-0.71	-0.93
Falling Number* (sec)	561	633	437	559	567	532	530	478
Avg. Micron Size								
Fisher Sub Sieve Sizer	19.5	22.9	21.3	23.7	21.9	20.5	22.5	20.2

\*\* 12% moisture basis; \*14% moisture basis

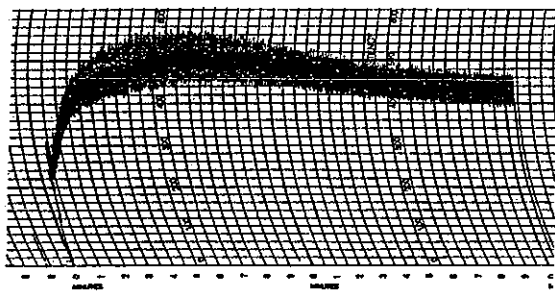
## Physical Dough Tests

1998 (Small Scale) Kansas

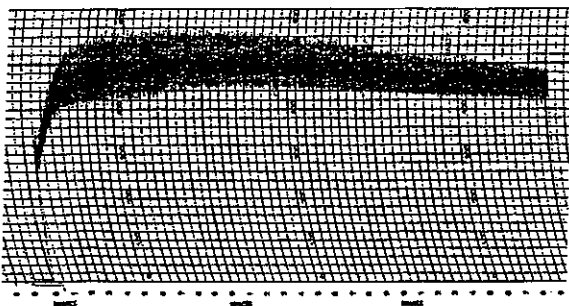
## Farinograms



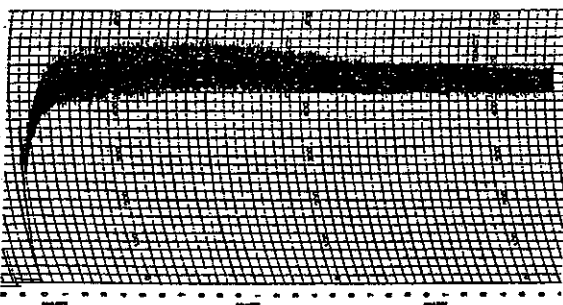
Abs: 58.7%, Peak: 25.5, Stab: 40.0



Abs: 62.9%, Peak: 6.5, Stab: 11.0

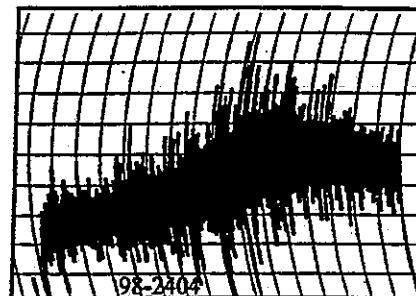


Abs: 57.6%, Peak: 12.5, Stab: 24.0

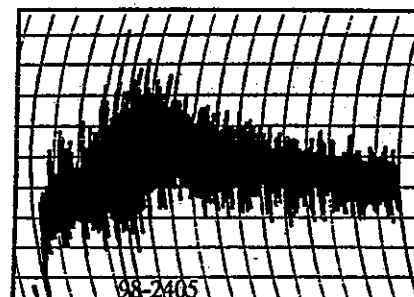


Abs: 61.1%, Peak: 10.0, Stab: 21.0

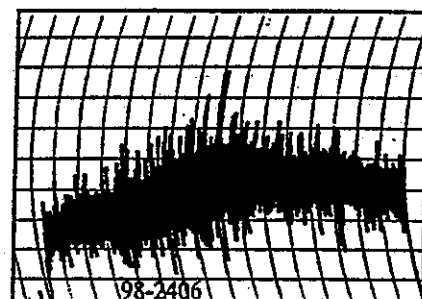
## Mixograms



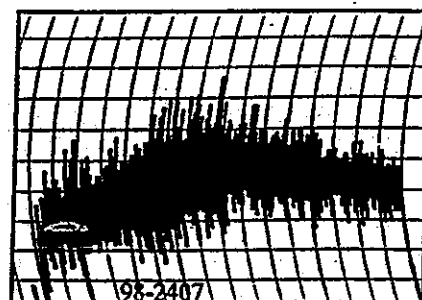
Abs: 63.6%, Peak: 5.4, Stab: 5



Abs: 64.0%, Peak: 2.6, Stab: 4



Abs: 63.0%, Peak: 4.5, Stab: 4



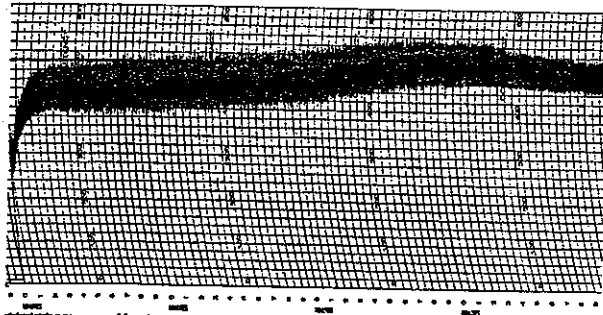
Abs: 64.0%, Peak: 3.9, Stab: 4

98-404  
Karl 92 (check)98-405  
Larned (check)98-406  
KS95HW167-3  
Stanton98-407  
KS95HW62-6

# Physical Dough Tests

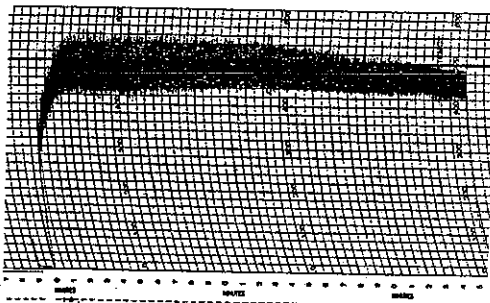
## 1998 (Small Scale) Kansas

### Farinograms



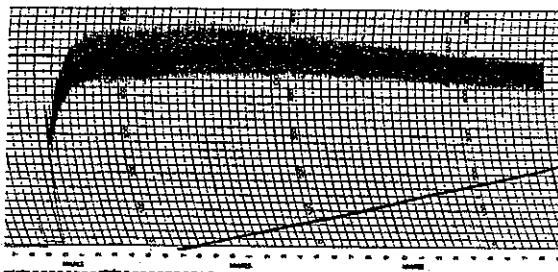
Abs: 61.8%, Peak: 32.0, Stab: 35.5

98-408  
KS96HW94



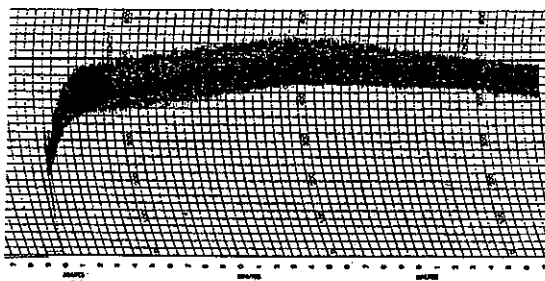
Abs: 57.4%, Peak: 10.0, Stab: 21.5

98-409  
KS96HW115



Abs: 62.1%, Peak: 10.5, Stab: 24.0

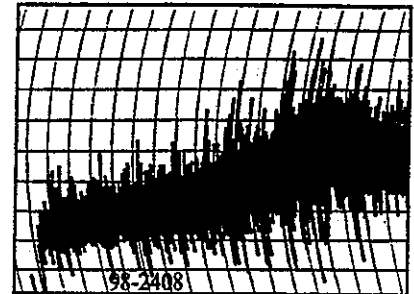
98-410  
KS84063-2W



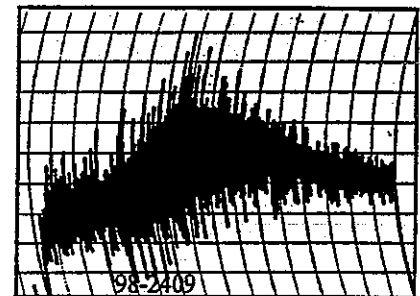
Abs: 59.0%, Peak: 16.5, Stab: 20.5

98-411  
KS85W663-42W

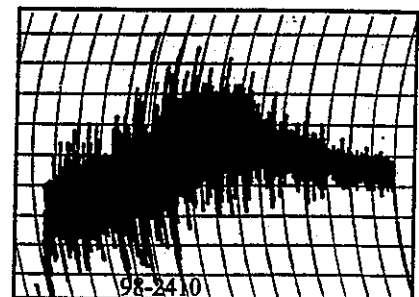
### Mixograms



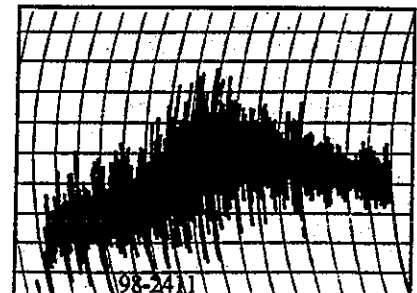
Abs: 65.0%, Peak: 7.4, Stab: 5



Abs: 64.0%, Peak: 3.9, Stab: 3



Abs: 66.7%, Peak: 4.0, Stab: 3



Abs: 65.4%, Peak: 4.4, Stab: 3

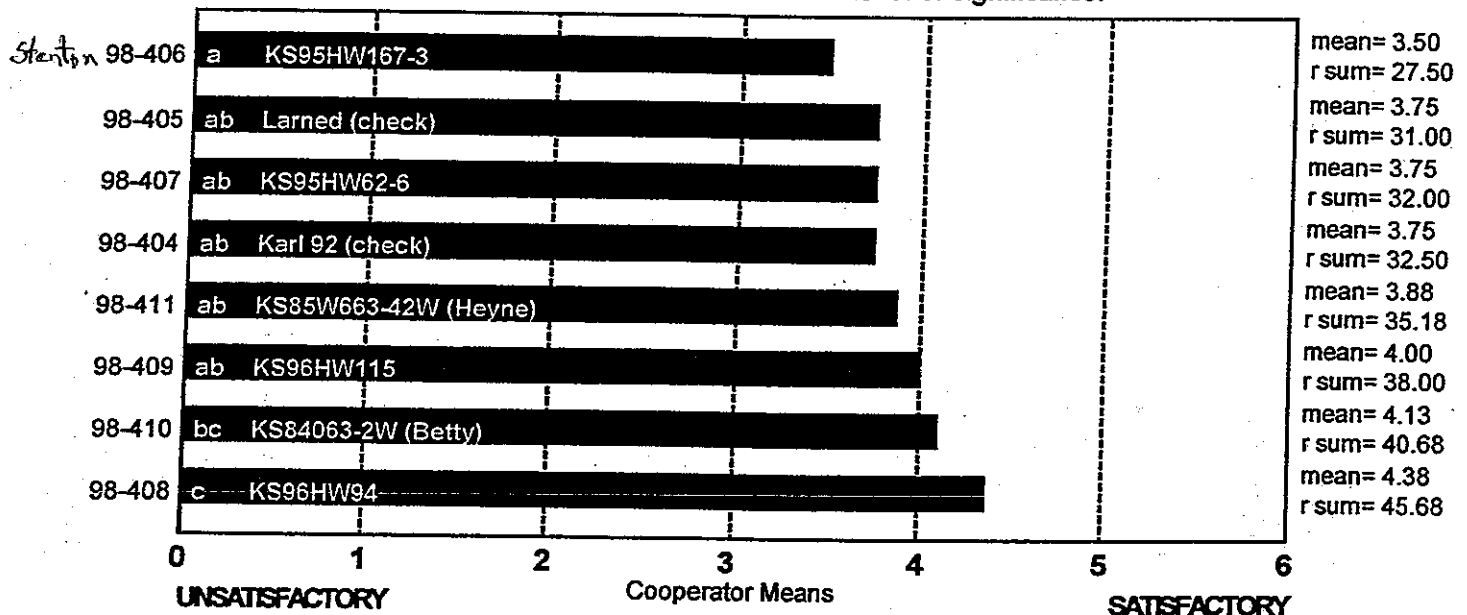
# SPONGE CHARACTERISTICS

## (Small Scale) Kansas

ncoop= 8  
 chisq= -3.06  
 chisqc= 24.92  
 cvchisq= 14.07  
 crdiff= 12.99

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.



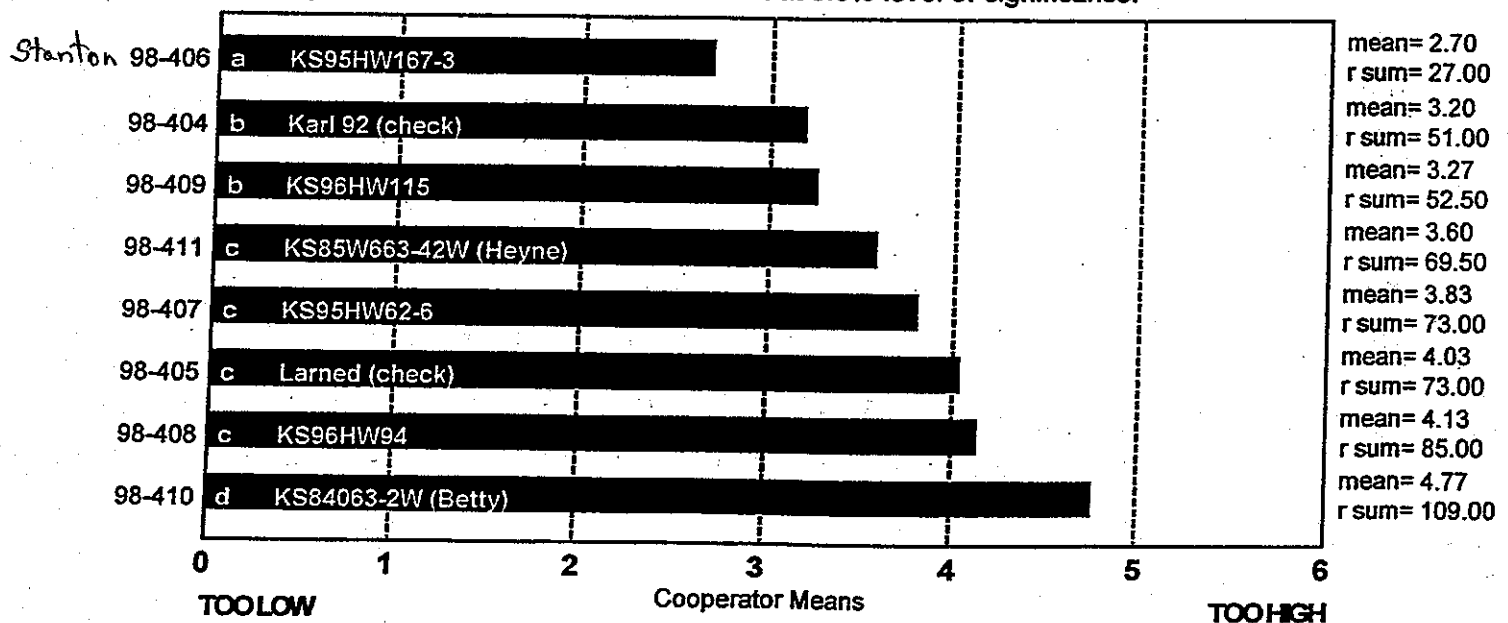
# BAKE ABSORPTION

## (Small Scale) Kansas

ncoop= 15  
 chisq= 47.01  
 chisqc= 66.10  
 cvchisq= 14.07  
 crdiff= 16.69

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.





# BAKE ABSORPTION, ACTUAL (14% MB)

## (Small Scale) Kansas

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
98-404 Karl 92 (check)	59.0	62.0	58.6	59.0	66.4	62.9	59.0	59.0	68.3	66.9	58.2	63.6	64.0	59.6	62.5	60.6
98-405 Larned (check)	63.5	62.0	59.0	62.0	65.2	62.7	61.0	59.0	68.4	66.7	63.8	64.0	63.5	63.5	63.0	61.1
98-406 KS95HW167-3	59.5	61.0	58.0	59.0	63.8	60.3	60.0	59.0	67.2	65.3	59.9	63.0	62.0	57.7	62.0	59.9
98-407 KS95HW62-6	62.5	62.0	59.0	60.0	66.9	63.5	62.0	59.0	68.9	65.8	58.6	64.0	64.5	62.5	63.0	61.6
98-408 KS96HW94	60.0	62.0	60.0	60.0	69.0	66.0	61.0	59.0	69.5	67.2	60.9	65.0	65.0	63.0	64.0	62.4
98-409 KS96HW115	60.5	62.0	59.0	59.0	65.1	63.6	61.0	59.0	68.3	65.6	58.1	64.0	63.5	58.4	63.0	61.1
98-410 KS84063-2W (Betty)	63.0	64.0	61.7	60.0	68.8	66.4	64.0	61.0	71.4	69.8	59.6	68.7	67.0	64.7	65.0	63.1
98-411 KS85W663-42W (Heyne)	61.0	64.0	60.4	59.0	65.7	64.1	60.0	60.0	70.2	66.2	57.0	65.4	63.5	59.5	64.5	61.5

Raw Data

# BAKE MIX TIME, ACTUAL

## (Small Scale) Kansas

	Coop. A	Coop. B	Coop. C	Coop. D	Coop. E	Coop. F	Coop. G	Coop. H	Coop. I	Coop. J	Coop. K	Coop. L	Coop. M	Coop. N	Coop. O	Coop. P
98-404 Karl 92 (check)	60.0	9.0	6.0	22.0	9.5	6.3	7.2	20.0	9.0	6.9	13.0	5.8	30.0	4.8	21.0	4.8
98-405 Larned (check)	33.0	6.0	5.0	19.0	3.8	2.8	4.0	7.0	5.0	3.1	5.0	3.0	5.0	2.5	11.0	2.5
98-406 KS95HW167-3	35.0	9.0	6.0	19.0	6.0	4.2	5.6	9.0	4.0	5.0	8.0	4.3	9.0	3.8	9.0	3.5
98-407 KS95HW62-6	32.0	6.0	7.0	20.0	5.5	3.8	5.2	11.0	4.0	4.2	8.0	4.5	6.0	3.5	10.0	3.5
98-408 KS96HW94	60.0	9.0	7.0	20.0	13.0	8.0	10.2	20.0	11.0	8.7	20.0	7.8	25.0	6.5	25.0	6.8
98-409 KS96HW115	4.0	6.0	6.5	20.0	5.1	4.2	5.0	16.0	6.0	4.2	7.0	4.0	7.0	3.3	10.0	3.0
98-410 KS84063-2W (Betty)	60.0	6.0	7.5	20.0	5.5	4.2	5.2	13.0	6.0	4.2	11.0	4.5	12.0	3.8	13.0	3.3
98-411 KS85W663-42W (Heyne)	60.0	9.0	5.5	20.0	6.0	4.8	5.0	12.0	7.0	4.7	8.0	4.5	16.0	3.3	9.0	3.0

Raw Data

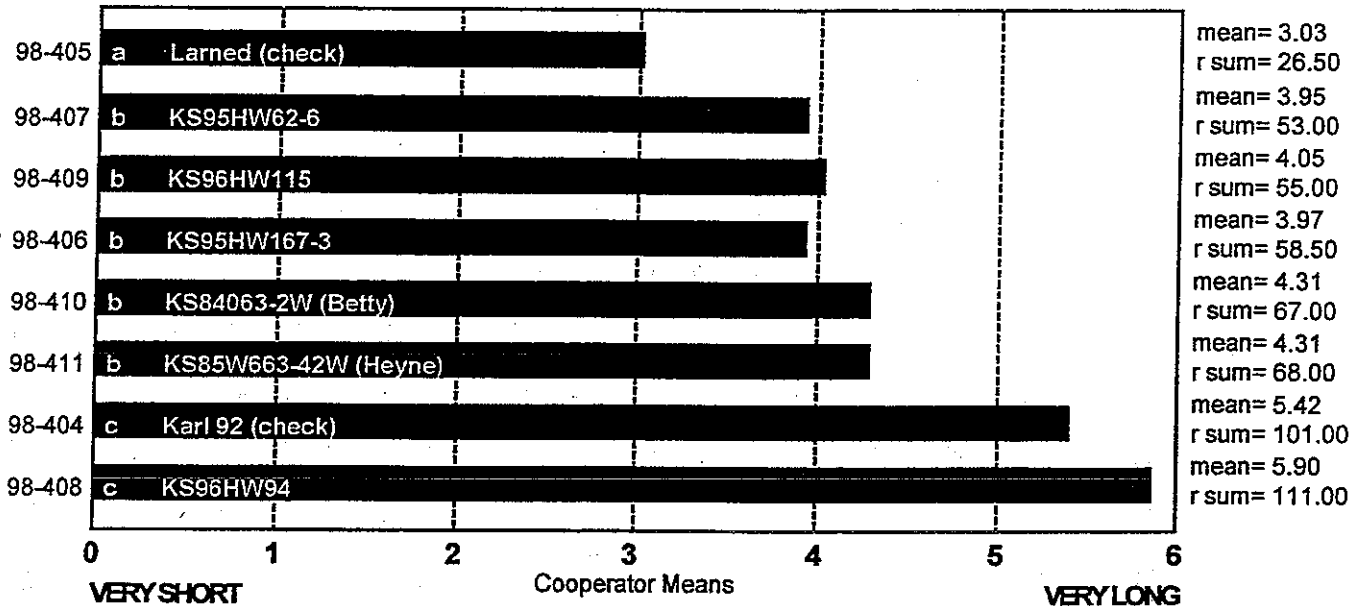
2002000507

# BAKE MIX TIME (Small Scale) Kansas

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.

ncoop= 15  
chisq= 57.15  
chisqc= 65.58  
cvchisq= 14.07  
crdiff= 15.94

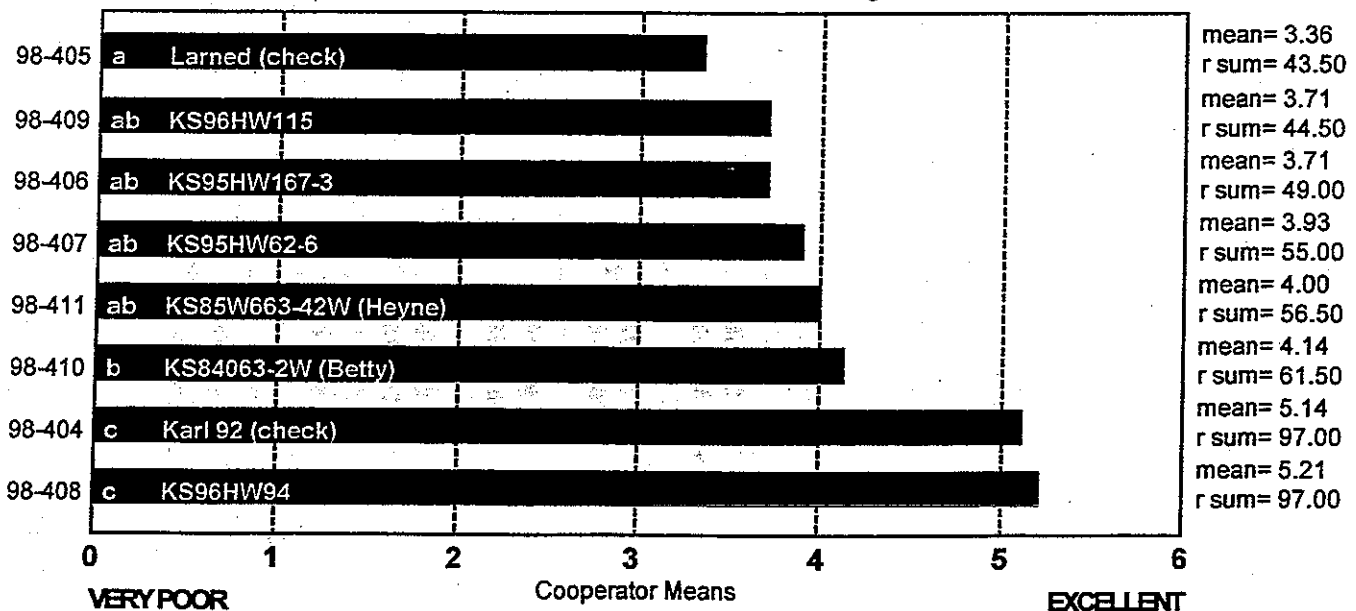


# MIXING TOLERANCE (Small Scale) Kansas

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.

ncoop= 14  
chisq= 39.75  
chisqc= 48.14  
cvchisq= 14.07  
crdiff= 17.50



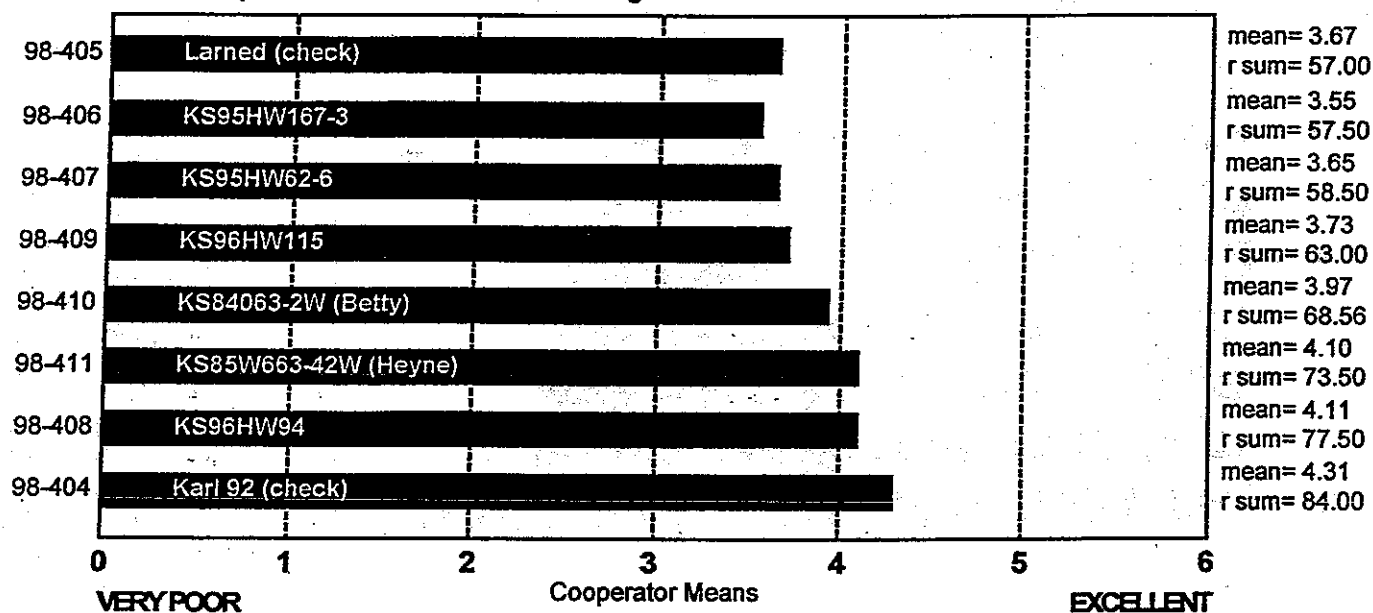
# DOUGH CHAR. 'OUT OF MIXER'

## (Small Scale) Kansas

ncoop= 15  
 chisq= 7.34  
 chisqc= 13.60  
 cvchisq= 14.07  
 crdiff=

Variety order by rank sum.

No samples different at 5.0% level of significance.



# DOUGH CHAR. 'OUT OF MIXER', DESCRIBED

## (Small Scale) Kansas

	Sticky	Wet	Tough	Good	Excellent
98-404 Karl 92 (check)	0	0	6	8	1
98-405 Larned (check)	0	1	3	10	1
98-406 KS95HW167-3	0	1	3	10	1
98-407 KS95HW62-6	3	0	3	9	0
98-408 KS96HW94	1	0	8	5	1
98-409 KS96HW115	1	0	3	9	2
98-410 KS84063-2W (Betty)	1	0	5	7	2
98-411 KS85W663-42W (Heyne)	0	0	4	7	4

Frequency Table

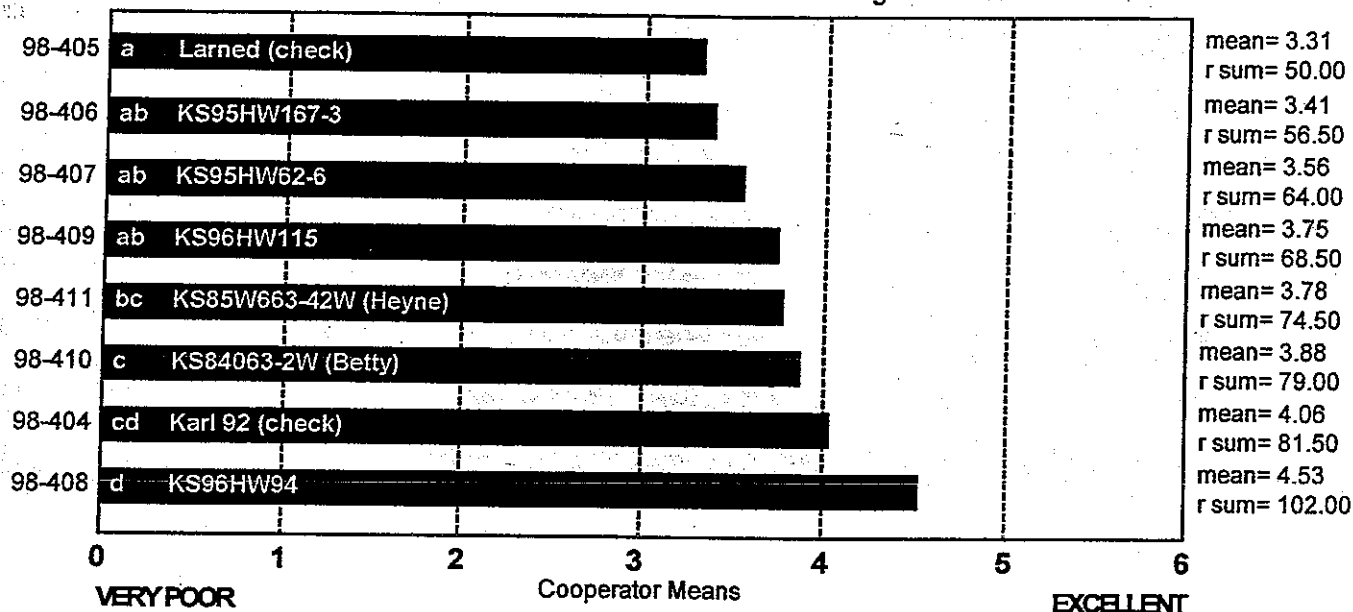
# DOUGH CHAR. 'AT MAKE UP'

## (Small Scale) Kansas

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.

ncoop= 16  
chisq= 19.23  
chisqc= 25.51  
cvchisq= 14.07  
crdiff= 21.91



# DOUGH CHAR. 'AT MAKE UP', DESCRIBED

## (Small Scale) Kansas

	Sticky	Wet	Tough	Good	Excellent
98-404	0	0	7	5	3
Karl 92 (check)	0	0	1	13	0
98-405	0	1	4	8	2
Larned (check)	0	0	2	12	1
98-406	0	0	12	3	0
KS95HW167-3	0	0	3	10	2
98-407	0	0	6	6	3
KS95HW62-6	0	0	5	7	3
98-408	0	0	0	0	0
KS96HW94	0	0	0	0	0
98-409	0	0	0	0	0
KS96HW115	0	0	0	0	0
98-410	0	0	0	0	0
KS84063-2W (Betty)	0	0	0	0	0
98-411	0	0	0	0	0
KS85W663-42W (Heyne)	0	0	0	0	0

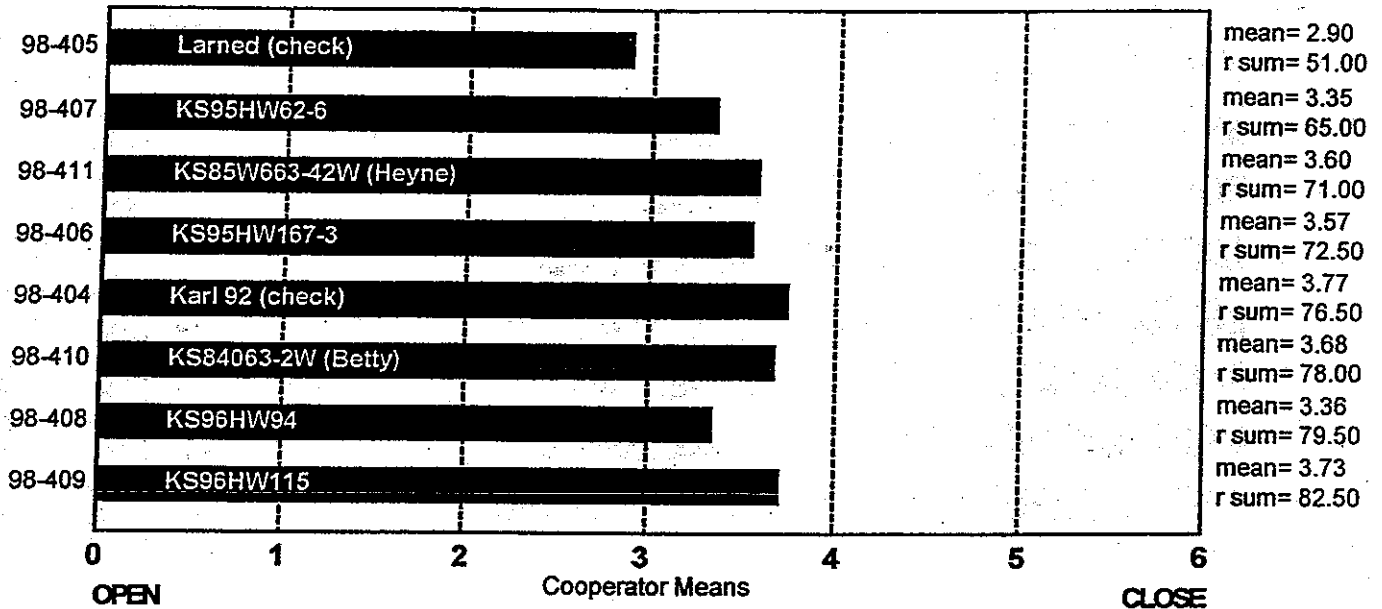
Frequency Table

# CRUMB GRAIN (Small Scale) Kansas

ncoop= 16  
chisq= 7.44  
chisqc= 9.01  
cvchisq= 14.07  
crdiff=

Variety order by rank sum.

No samples different at 5.0% level of significance.



## CRUMB GRAIN, DESCRIBED (Small Scale) Kansas

	Open	Dense	Irregular
98-404 Karl 92 (check)	5	4	3
98-405 Larned (check)	8	3	2
98-406 KS95HW167-3	5	3	4
98-407 KS95HW62-6	7	3	4
98-408 KS96HW94	5	5	2
98-409 KS96HW115	4	4	3
98-410 KS84063-2W (Betty)	8	4	2
98-411 KS85W663-42W (Heyne)	8	5	1

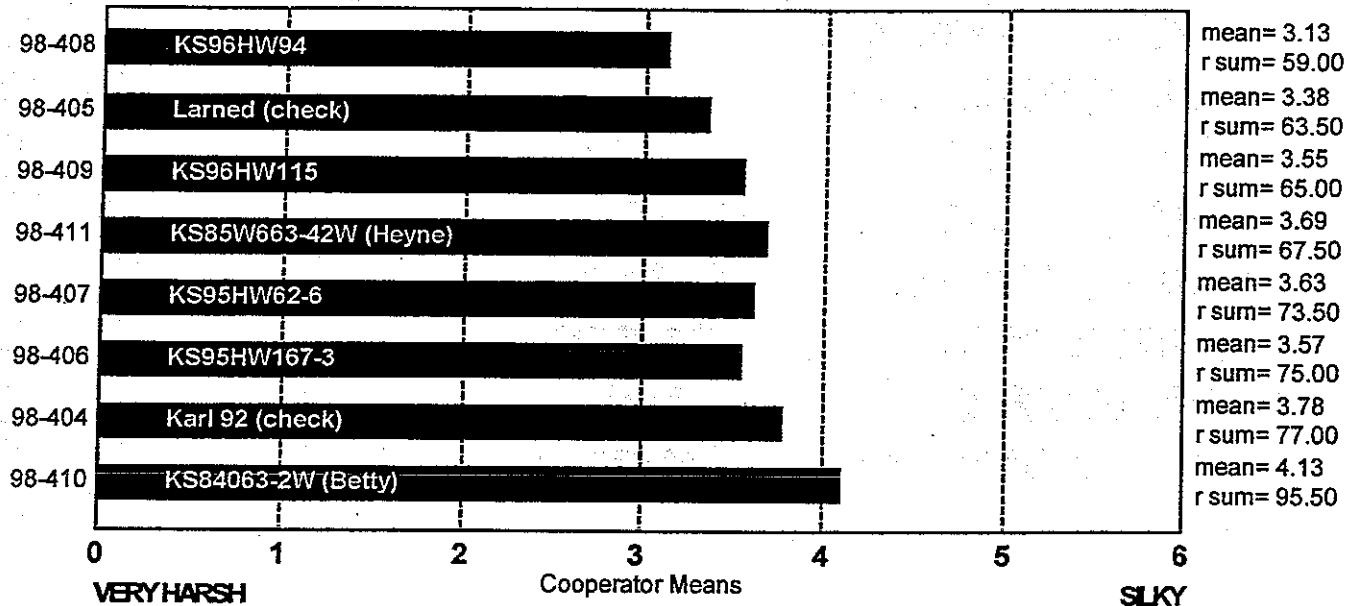
Frequency Table

# CRUMB TEXTURE (Small Scale) Kansas

Variety order by rank sum.

No samples different at 5.0% level of significance.

ncoop= 16  
chisq= 9.36  
chisqc= 13.30  
cvchisq= 14.07  
crdiff=



## CRUMB TEXTURE, DESCRIBED (Small Scale) Kansas

	Coarse	Harsh	Silky
98-404 Karl 92 (check)	3	2	8
98-405 Larned (check)	2	5	7
98-406 KS95HW167-3	4	3	6
98-407 KS95HW62-6	1	4	9
98-408 KS96HW94	4	5	5
98-409 KS96HW115	3	3	7
98-410 KS84063-2W (Betty)	2	3	9
98-411 KS85W663-42W (Heyne)	3	2	8

Frequency Table

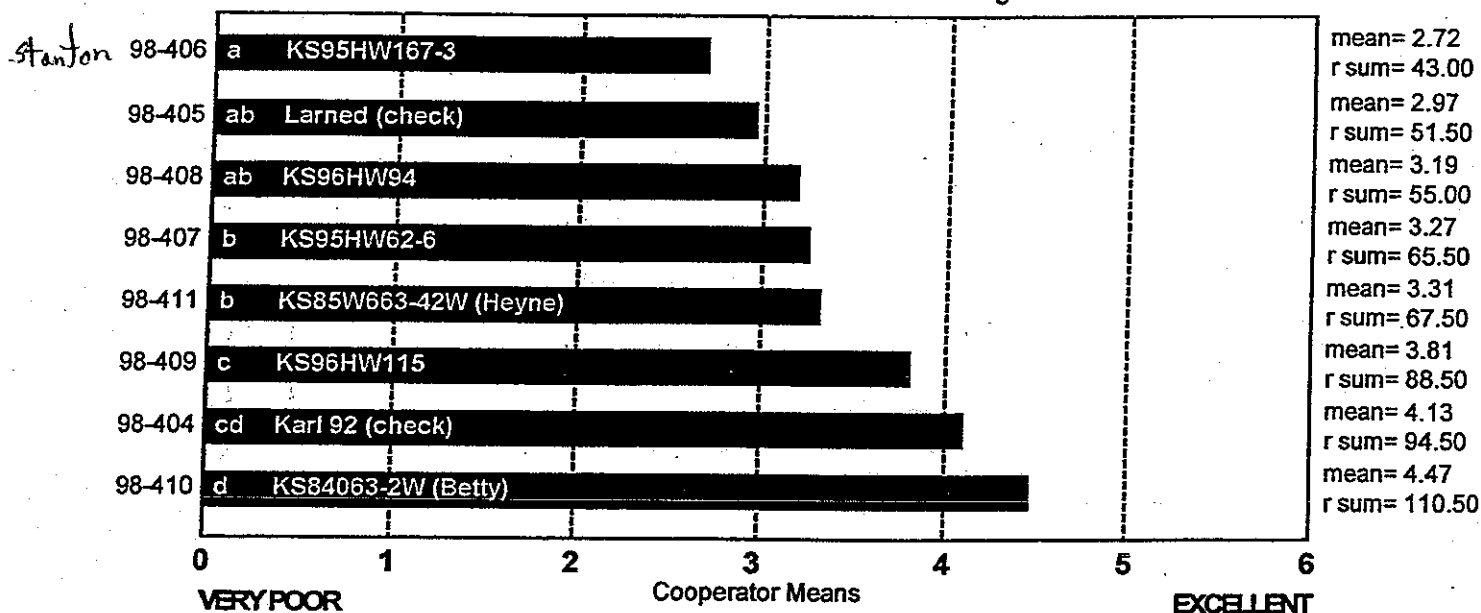
# CRUMB COLOR

## (Small Scale) Kansas

ncoop= 16  
 chisq= 40.35  
 chisqc= 51.26  
 cvchisq= 14.07  
 crdiff= 18.77

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.



# CRUMB COLOR, DESCRIBED

## (Small Scale) Kansas

	Yellow	Gray	Dull	Creamy	Bright White
98-404 Karl 92 (check)	2	0	1	5	6
98-405 Larned (check)	5	0	1	7	0
98-406 KS95HW167-3	5	0	4	5	0
98-407 KS95HW62-6	3	0	3	7	1
98-408 KS96HW94	4	0	2	6	2
98-409 KS96HW115	2	0	0	9	2
98-410 KS84063-2W (Betty)	1	0	0	6	6
98-411 KS85W663-42W (Heyne)	4	0	1	7	1

Frequency Table



# CELL SHAPE, DESCRIBED

## (Small Scale) Kansas

	Round	Irregular	Elongated
98-404	0	9	5
Karl 92 (check)			
98-405	2	8	4
Larned (check)			
98-406	1	10	2
KS95HW167-3			
98-407	3	9	1
KS95HW62-6			
98-408	2	10	2
KS96HW94			
98-409	3	6	5
KS96HW115			
98-410	1	7	6
KS84063-2W (Betty)			
98-411	1	8	4
KS85W663-42W (Heyne)			

Frequency Table

# CELL THICKNESS, DESCRIBED

## (Small Scale) Kansas

	Too Thin	Too Thick	Variable	Broken	Acceptable
98-404	1	0	6	0	6
Karl 92 (check)					
98-405	0	3	4	0	6
Larned (check)					
98-406	0	2	8	0	4
KS95HW167-3					
98-407	0	3	6	0	4
KS95HW62-6					
98-408	1	3	4	0	5
KS96HW94					
98-409	0	2	6	0	5
KS96HW115					
98-410	0	2	7	0	4
KS84063-2W (Betty)					
98-411	0	2	5	0	6
KS85W663-42W (Heyne)					

Frequency Table

# LOAF WEIGHT, ACTUAL

## (Small Scale) Kansas

	Coop. A	Coop. B	Coop. C	Coop. D	Coop. E	Coop. F	Coop. G	Coop. H	Coop. I	Coop. J	Coop. K	Coop. L	Coop. M	Coop. N	Coop. O	Coop. P
98-404 Karl 92 (check)	466.0		490.0		153.4	139.0	132.4	421.0	454.0	150.5	597.0	139.7	460.2	130.0	421.2	131.6
98-405 Larned (check)	456.0		495.0		152.5	139.8	136.3	423.0	448.0	154.0	594.0	141.2	461.1	135.0	418.5	133.7
98-406 KS96HW167-3	462.0		490.0		149.1	136.7	136.1	420.0	449.0	150.0	594.0	139.7	459.6	129.0	417.0	133.9
98-407 KS95HW62-6	457.0		490.0		153.0	138.6	136.0	419.3	448.0	150.8	597.0	142.7	461.4	133.0	416.8	137.2
98-408 KS96HW94	464.0		495.0		151.8	139.2	136.3	422.5	453.0	151.2	605.0	144.6	460.8	133.0	422.7	134.8
98-409 KS96HW115	462.0		495.0		152.0	140.4	136.1	420.5	448.0	153.4	598.0	145.6	464.3	132.0	419.1	137.4
98-410 KS84063-2W (Betty)	457.0		495.0		152.9	139.2	142.1	422.0	451.0	154.6	596.0	144.7	459.8	135.0	417.8	138.5
98-411 KS85W663-42W (Heyne)	460.0		495.0		151.0	138.2	136.6	420.0	446.0	149.4	594.0	146.2	463.0	132.0	418.9	136.2

Raw Data

# LOAF VOLUME, ACTUAL

## (Small Scale) Kansas

	Coop. A	Coop. B	Coop. C	Coop. D	Coop. E	Coop. F	Coop. G	Coop. H	Coop. I	Coop. J	Coop. K	Coop. L	Coop. M	Coop. N	Coop. O	Coop. P
98-404 Karl 92 (check)	2600	1125	2850	3045	970	955	970	2800	2625	955	2625	1025	3000	995	2226	900
98-405 Larned (check)	2600	990	3125	2809	900	900	940	2800	2550	1020	2350	925	2800	915	2133	800
98-406 KS95HW167-3	2625	1095	3125	2839	975	965	930	2800	2500	1010	2450	920	2875	950	2256	855
98-407 KS95HW62-6	2600	1045	3050	2853	970	915	915	2800	2325	925	2375	875	2725	925	2250	795
98-408 KS96HW94	2550	900	2475	2750	950	915	955	2700	2275	915	2600	950	2500	965	2103	840
98-409 KS96HW115	2650	1045	2975	2750	925	960	935	2700	2425	995	2300	945	2725	925	2256	825
98-410 KS84063-2W (Betty)	2675	980	3300	2927	1005	1105	990	2800	2375	1045	2425	1100	2913	1060	2183	865
98-411 KS85W663-42W (Heyne)	2775	1055	2900	2868	975	1000	1020	2750	2550	1025	2450	975	2825	1025	2153	890

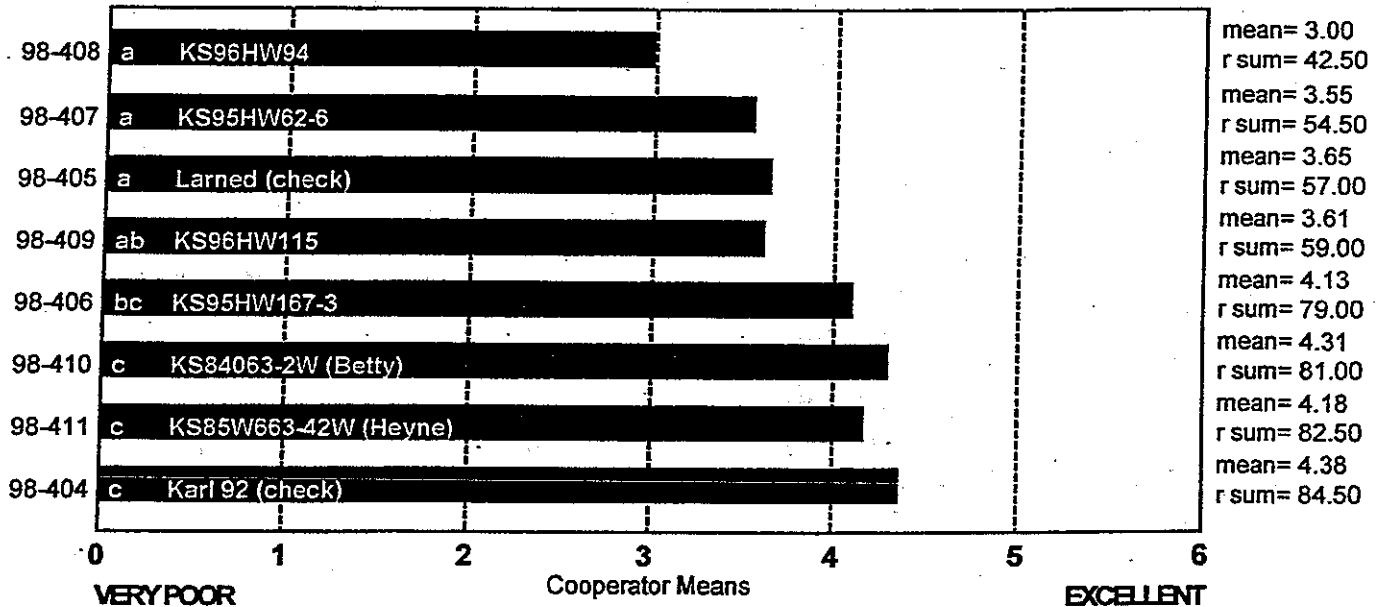
Raw Data

# LOAF VOLUME (Small Scale) Kansas

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.

ncoop= 15  
chisq= 20.06  
chisqc= 25.45  
cvchisq= 14.07  
crdiff= 21.54

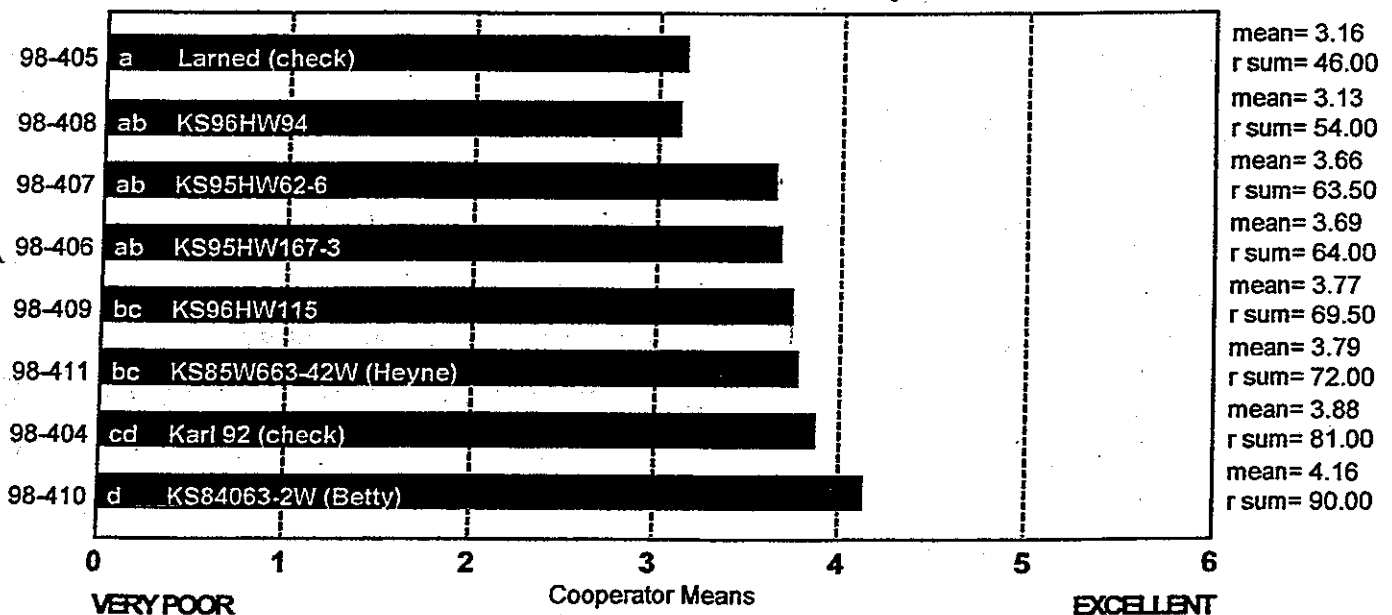


# OVERALL BAKING QUALITY (Small Scale) Kansas

Variety order by rank sum.

Samples with the same letter not different at 5.0% level of significance.

ncoop= 15  
chisq= 15.39  
chisqc= 18.16  
cvchisq= 14.07  
crdiff= 23.34



# COOPERATOR'S COMMENTS

## (Small Scale) Kansas

### 98-404 Karl 92 (check)

- Very strong dough
- crumb grain=sl. dense; cell shape = sl. elongated; color=white
- strong mixing flour, irregular streaky grain; good volumes, creamy crumb color
- Long mix time
- 13 ppm AA
- Slightly weak crumb texture
- MOISTURE 13.43 ASH(14%) 0.489 PROTEIN(14%) 12.21
- Bake mix time may be too long
- Best of show in quality, but low absorption; cell thickness=thin=desirable
- Slight Shell Top, Break Little Rough, Slightly Dry
- v. long mixt; hi abs.; v. nice grain; elastic dough; v. hi volume; crumb texture=good; crumb grain=closed
- Would be a good flour to blend with weaker flours.

### 98-405 Larned

- Dead dough
- crumb grain=sl. dense; cell shape = sl. elongated
- strong flour, open, irregular grain, low volumes, creamy crumb color
- Good absorption and crumb grain
- 75 ppm AA; oxidation; mix time; volume
- Slightly weak crumb texture
- MOISTURE 13.29 ASH(14%) 0.461 PROTEIN(14%) 12.07
- sl. short mixt; avg. abs.; poor grain; yellow; weak dough; good volume; at makeup=weak

### 98-406 KS95H167-3

- dead dough, lower absorption, good internals
- crumb grain=sl. dense; cell shape = sl. elongated
- good mixing strength, open grain, slightly low to average volumes.
- Good absorption, loaf vol. and crumb grain
- 38 ppm AA
- Strong and extensible dough out of the mixer
- MOISTURE 13.02 ASH(14%) 0.483 PROTEIN(14%) 11.64
- Very good loaf volume for its flour protein content. Very good crumb grain.
- out of mixer=sl. tough; cell thickness=thin=desirable
- Nice Break, Little Dry
- avg. mixt; avg. abs.; sl. open grain; yellow; elastic dough; good volume.

# COOPERATOR'S COMMENTS (con't.)

## (Small Scale) Kansas

### 98-407 KS95HW62-6

- crumb grain=sl. dense; cell shape = sl. elongated; color=white
- strong mixing flour, open grain, average volume
- Good absorption, loaf vol. and crumb grain
- 38 ppm AA
- Slightly weak crumb texture
- MOISTURE 13.85 ASH(14%) 0.458 PROTEIN(14%) 11.97
- out of mixer = very tough
- Break Slightly Rough, Little Dry
- avg. mixt; hi abs.; avg. grain; silky texture; nice dough; avg. volume.

### 98-408 KS96HW94

- slight core, very strong dough, good internals
- tough, bucky
- out of mixer=tough/old
- very strong mixing flour, open irregular grain, low volume
- Long mix time- messy dough while mixing- otherwise good
- 0 ppm AA; mix time
- MOISTURE 13.42 ASH(14%) 0.430 PROTEIN(14%) 12.13
- Crumb grain somewhat questionable, mix time too long.
- Too long of mix times; cell thickness=thin=desirable
- Good Break, Dry; Long time for mix pickup added .5 min
- v. long mixt; hi abs.; nice grain; tough sponge; elastic dough; low volume.
- Sides of loaf were a little concave.

### 98-409 KS96HW115

- slightly dead dough
- crumb grain=sl. dense; cell shape = sl. elongated; color=sl. creamy
- mix strength was very good, open, irregular grain, low volumes
- Good absorption, loaf vol. and crumb grain
- 38 ppm AA
- Slightly weak crumb texture
- MOISTURE 13.15 ASH(14%) 0.419 PROTEIN(14%) 11.87
- Very good loaf volume and crumb grain.
- out of mixer=sl. tough; Very low absorption
- Nice Break, Little Dry
- avg. mixt; avg. abs.; nice grain; nice dough; avg. volume; crumb grain=closed

## COOPERATOR'S COMMENTS (con't.)

### (Small Scale) Kansas

**98-410 KS84063-2W**

- excellent but very strong dough
- color=white
- Extremely strong flour, open, irregular grain, above average volume
- Excellent exterior and interior crumb, white, silky
- 38 ppm AA; crumb grain
- MOISTURE 13.60 ASH(14%) 0.460 PROTEIN(14%) 14.00
- out of mixer= sl. tough; Poor texture and color
- Nice Break, Large Volume, No Shell Top at all
- sl. long mixt; hi abs.; avg. grain; silky texture; white; nice dough; hi volume.

**98-411 KS85W663-42W**

- excellent but very strong dough
- crumb grain=sl. dense;
- strong flour, open grain, average volumes
- Excellent exterior and interior crumb, white, silky
- 25 ppm AA
- Strong and extensible dough out of the mixer
- MOISTURE 13.76 ASH(14%) 0.436 PROTEIN(14%) 12.59
- at make-up= sl. tough; cell thickness=thin=desirable
- Nice Break
- long mixt; avg. abs.; good grain; elastic dough at makeup; good volume; crumb texture=good
- Short proof time.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

## EXHIBIT E

## STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S)  Kansas Agricultural Experiment Station	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  KS95H167-3	3. VARIETY NAME  Stanton
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)  Waters Hall Kansas State University Manhattan, KS 66506	5. TELEPHONE (include area code)  785-532-6147	6. FAX (include area code)  785-532-6563
7. PVPO NUMBER  200200050		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO  
If no, give name of country

0. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

1. Additional explanation on ownership (if needed, use reverse for extra space):

## LEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

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